

- Adamson, Nicole** Psychology Coffelt Rm. 1:30 - 1:45  
*A Systems Theory Approach to Attachment in Adult Relationships*  
 Newborn humans are dependent upon a care-giver for satisfaction of basic physiological needs. This dependency leads to an attachment bond. Attachment bonds learned early in life become permanent models that will be used throughout the remainder of life. Secure attachment is associated with many positive behaviors and insecure attachment comes with many negative consequences. It is important to locate the major factors that produce positive and negative attachment styles in order to better understand how to promote the development of healthy attachment in children and adults. This study attempts to use the current understanding of attachment to prove that the attachment style of adult care-givers will be modeled by the child when he or she becomes an adult. A survey consisting of three questionnaires has been constructed using online survey software. The first questionnaire is the Experiences in Close Relationships Inventory, the second is a modified version of the Experiences in Close Relationships Inventory, and the third questionnaire is the Inventory of Parent and Peer Attachment. The survey has been emailed to all students at Youngstown State University who are enrolled in General Psychology for the spring 2008 semester. Results will be analyzed using SPSS/AMOS.
- Airhart, Jonathan** Electrical Engineering James Gallery 8:45 - 9:00  
*Design of a High Voltage Audio System using a Tesla Coil and Plasma Tweeter*  
 The purpose of this project is to design a high voltage audio system which will incorporate a Plasma Sonic Tesla Coil and Plasma Tweeter. The project will serve as an electrical demonstration for potential electrical engineering students, alumni, and administration. The project encompasses the understanding of the group as learned in the undergraduate electrical engineering program and will abide by the Institute of Electrical and Electronics' Engineers code of ethics. The result will be a distinguished project for professional demonstration to be exhibited by the university.
- Allen, Derek** Industrial & Systems Engineering Ohio Rm. 10:30 - 12:00  
*Production Flow Analysis Within a Production System at Patriot Seating*  
 YSU Industrial Engineering students in Methods engineering class performed a series of exercises to reinforce learning in the classroom while obtaining valuable experience in the work field. A time study analysis was performed on work measurement techniques applied within a local manufacturer's facility, Patriot Seating. Specific techniques that were applied to the environment include: Time motion studies using a video camera along with computer video techniques, MOST Analysis, and MTM-1 and MTM-2 were also considered in the process. Work sampling has been applied to the time study to determine production standards and allowances applicable to the job due to the work load distributed among employees. These results led to ideas for management to create a more efficient company along with student education which have strengthened both the company and University.
- Alshafei, Firas** Electrical Engineering James Gallery 8:45 - 9:00  
*Design of a High Voltage Audio System using a Tesla Coil and Plasma Tweeter*  
 The purpose of this project is to design a high voltage audio system which will incorporate a Plasma Sonic Tesla Coil and Plasma Tweeter. The project will serve as an electrical demonstration for potential electrical engineering students, alumni, and administration. The project encompasses the understanding of the group as learned in the undergraduate electrical engineering program and will abide by the Institute of Electrical and Electronics' Engineers code of ethics. The result will be a distinguished project for professional demonstration to be exhibited by the university.
- Anderson, Pat** Chemistry Ohio Rm. 1:30 - 3:00  
*In Situ Alkyl and Acyl Azide Synthesis Using p-ABSA/DBU*  
 The commercially available sulfonyl azide p-acetamidobenzenesulfonyl azide (p-ABSA) reacts with the organic base 1,8-diazabicycloundec-7-ene (DBU) to produce an organic soluble salt that serves as a safe source of azide anion. We are developing safe routes to important organic azides, such as alkyl and acyl azides, by using this salt in reactions with simple substrates such as alkyl and acyl halides. The chemistry developed thus far, the use of microwave heating to speed up reactions, as well as the use of Infra-red spectroscopy to follow the course of reactions will be presented.
- Arnal, Joshua** Electrical Engineering Ohio Rm. 10:30 - 12:00  
*Converting Human Kinetic Energy to Electricity Using a Stationary Bike*  
 Our goal is to modify a stationary exercise bike in such a way that it can be used as a generator while someone is exercising. The AC electricity generated while pedaling the bike will be converted into DC using a rectifier and a voltage regulator so that it can be stored in a deep cycle 12V battery. Once the battery has enough electricity stored, it can be passed through a power inverter and used as if it was coming straight from the electric company.
- Aurand, Colleen** Food & Nutrition Ohio Rm. 3:30 - 5:00  
*Knowledge and Practices Related to Dietary Sodium*  
 The American Heart Association (AHA, 2008), reports that about 8 million Americans die each year from hypertension, and every third American has high blood pressure. They suggest that limiting sodium intake to 2,400 mg/day by avoiding salty foods and table salt can help control blood pressure. This study used a 15 item questionnaire to collect demographic data as well as evaluate YSU students' knowledge about sodium and health, eating habits that define sodium intake, and family history of chronic diseases impacted by sodium intake. Statistical analyses were performed using SPSS and ANOVA and t-tests were used to compare participants by ethnicity, family disease history, gender. Participants, n=172; 61% female; 83% Caucasian, 12% black; 61% with a family history of hypertension, were recruited from Kilcawley Center. The mean ( $\pm$  SEM) knowledge score (sodium content of foods) of Caucasians ( $9.85 \pm 0.21$ ) was significantly higher ( $p = 0.012$ ) than blacks' ( $7.8 \pm 0.58$ ). Female Sodium Risk Behavior scores ( $9.95 \pm 0.26$ ) indicated that they made significantly ( $p = 0.02$ ) healthier food choices than their male counterparts ( $10.57 \pm 0.42$ ). Although not statistically significant, there was a negative correlation between Sodium Knowledge and Behavior Risk scores ( $r = -0.15$ ). The results of this study indicate that there is room for improvement in sodium knowledge and food habits which other studies have indicated can reduce the onset and consequences of hypertension.

- Austin, Calvin** Master of Science in Chemistry Ohio Rm. 1:30 - 3:00  
*Rhodium(II)-catalyzed Decomposition of Furanose-derived Diazoesters*  
 There are many important naturally occurring organic compounds that feature two furan rings fused together. These compounds are challenging to synthesize, especially so if they contain chiral centers. In this project, which is supported by a grant from the Petroleum Research Fund of The American Chemical Society, we are investigating the use of organometallic chemistry for the efficient formation of various fused furan systems. Specifically, we are building platforms based on readily available furanoses that have diazoester groups attached, and studying the outcome of Rhodium(II)-catalyzed decompositions. Recent results from this work, including X-Ray and NMR experiments, will be presented in detail.
- Austin, Calvin** Chemistry Ohio Rm. 1:30 - 3:00  
*To Dissociate or Decompose: A Comparison of Thermal Analysis and Mass Spectrometry*  
 The fragmentation and thermal decomposition reactions of a series of simple organic compounds are investigated. The role specific functional groups play is examined where the simple placement of substituents are found to influence various gas phase reaction pathways. The complementary nature of thermal analysis and mass spectrometry will be presented.
- Bader, Eric** Exercise Science Ohio Rm. 3:30 - 5:00  
*Assessment of Habitual Dietary Intake of Firefighters: A Pilot Study*  
 Firefighters experience overwhelming occupational fatality due to coronary heart disease (CHD). Although a number of dietary factors are associated with CHD, there is little research examining intake patterns in the firefighter population. The objective of the study was to assess nutrient intake in a sample of firefighters and to compare values for select nutrients to recommendations specified in the Dietary Guidelines for Americans. Subjects included 28 active-duty, male firefighters from two platoons in Western New York. Subjects completed food-frequency questionnaires (FFQs) to determine habitual food intake. FFQs were analyzed, and descriptive statistics were used to examine nutrient intake. Average energy intake was  $2085 \pm 1220$  kcal/d, and mean intakes for fat, saturated fat, trans fat and cholesterol were  $77 \pm 49$ ,  $27 \pm 19$ ,  $4 \pm 3$ , and  $311 \pm 277$  g/d, respectively. Sodium intake ranged from 1249 to 11713 mg/d and with a mean of  $3446 \pm 1939$  mg/d. Fiber consumption ranged from 7 – 51 g/d with a mean of  $17 \pm 9$  g/d. The Dietary Guidelines for Americans suggest intake goals of &#8804; 2300 mg/d and &#8805; 14 g/1000 kcal, for sodium and fiber, respectively. The majority of subjects exceeded recommendations for sodium intake (79%, n = 22) and fell short of those for fiber (89%, n = 25). Results from this study indicate that firefighters may have dietary patterns that contribute to increased risk for cardiovascular disease. Further research is needed to assess this at risk population.
- Baird, Todd** Mechanical Engineering James Gallery 4:00 - 4:15  
*Road Protection Guard: A Design of Anti-Ram Barriers*  
 Road Protection Guard: A Design of Anti-Ram Barriers Todd Baird Nathan Sfara Brad McCullough Department of Mechanical Engineering Youngstown State University ABSTRACT The possibility of unwanted vehicles entering restricted areas throughout the country is a very real threat. This can include attacks on airports, government buildings, power plants and medical laboratories. The use of trucks to break through barriers and gain access to the restricted areas was the main point of this project. This study must meet many criteria including impacts, design, and easy maintenance. This work tested the durability, stopping distance, and damage caused to a truck weighing 6800 kg (15000 lbm) going 48 kph (30mph). The design incorporates three steel barriers filled with concrete, spaced 0.76 m (2.5 ft) apart and 1 m (3 ft) tall. Impact mechanics were also used to predict where the failure would occur in the structure before it happens. In the end, all of the analyses used will determine the structural design and safety of the Road Protection Guard (R.P.G.). Safety was the most important factor in the design, for any civilian bystanders in the area. Limiting factors such as maintenance, cost, and weather were also taken into account when the final design was produced.
- Bako, Andy** Industrial & Systems Engineering Ohio Rm. 10:30 - 12:00  
*Production Flow Analysis Within a Production System at Patriot Seating*  
 YSU Industrial Engineering students in Methods engineering class performed a series of exercises to reinforce learning in the classroom while obtaining valuable experience in the work field. A time study analysis was performed on work measurement techniques applied within a local manufacturer's facility, Patriot Seating. Specific techniques that were applied to the environment include: Time and motion studies using a video camera along with computer video techniques, MOST Analysis, and MTM-1 and MTM-2 were also considered in the process. Work sampling has been applied to the time study to determine production standards and allowances applicable to the job due to the work load distributed among employees. These results led to ideas for management to create a more efficient company along with student education which have strengthened both the company and the university.
- Balint, Trevor** Physics Coffelt Rm. 11:30 - 11:45  
*Preliminary Tests of Induced Depletion of  $^{108m}\text{Ag}$  Using Bremsstrahlung Radiation*  
 It may be possible to utilize long-lived nuclear isomers to provide energy for certain applications. To do so, a method must be demonstrated to induce the depletion of nuclei within a sample that are metastable in an excited, isomeric state. An experiment is under way at Youngstown State University's X-ray Effects Laboratory as part of the Isomer Physics Project to test the effectiveness of the use of bremsstrahlung radiation as an inducing agent in the depletion of the 418-year  $^{108m}\text{Ag}$  isomer. This talk will discuss preliminary results, and experimental designs to increase the detection efficiency.

- Baltic, Ryan** Biology Jones Rm. 10:30 - 10:45  
*An Investigation of Entombed Beach Debris on the East Coast Beaches*  
 In March 2007 I was a member of a group of students under the direction of Dr. Ron Shaklee that conducted a preliminary investigation of entombed beach debris on East Beach of San Salvador Island, the Bahamas. The results of that work were presented at QUEST 2007. Our research was reported as preliminary in that it evaluated entombed beach material along a single transect from the waterline to the first line of coastal sand dunes. I intend to further that research and bring it to a more complete conclusion by designing a multi-faceted sampling of four distinct beachfront environments to determine how the rate of the entombment of beach debris is impacted by differing zones of wave energy along the beach. Pits will be excavated at ten meter intervals away from the waterline and into the coastal dunes. Excavations will be performed of one meter squares. Sands and foreign materials will be examined in ten centimeter layers to determine any variation in the accumulation and concentration of debris at specific depths. I expect the results of this research to indicate the degree to which surface accumulations of beach debris become incorporated into the beach sand and also indicate the influence of specific storm events in accelerating the rate at which flotsam is entombed into the beach environment.
- Bartholomew, Wayne** English Humphrey Rm. 11:15 - 11:30  
*The Bronze Dame*  
 The first chapter of a novel that is told through the vehicle of haiku. One might attempt to classify it as a new genre (“prosetry” comes to mind); yet, this was never the author’s intention in writing it. In essence, this work is an experiment, in which he attempts to blend the rigorous structuring of the East with the itinerant, gritty styling of the West. Many early, twentieth-century, Western influences can be found in protagonist Allen Crosse. Crosse is a blend of Dashiell Hammett’s Sam Spade and Raymond Chandler’s Philip Marlowe, infused with the voice and countenance of Humphrey Bogart (who filled the shoes of both grim detectives on the Silver Screen). Crosse’s world is inspired by the colorful language of Robert E. Howard and peopled with an eccentric cast, which aspires to the emotional and physical diversity of the casts in both Orson Welles’ TOUCH OF EVIL and Michael Curtiz’s CASABLANCA. In terms of the East, the author adhere to the “traditional” English formatting rules for the structuring of haiku: three lines, with a syllable count of five, seven, and five, in the first, second, and third line, respectively. The result is a terse, tightly edited voice that tells the story of a witty, perceptive hero, who, in Chandler’s words, is the “best man in his world, and a good enough man for any other.” True to form, the hero prevails – but not without losing a piece of himself to his dark, female antagonist in the process.
- Basile, Ashley** Master of Business Administration Pugsley Rm. 1:45 - 2:00  
*Experiential Learning as Student Market Consultants*  
 This presentation showcases experiential education through the work of students acting as market consultants on real life projects within the Mahoning Valley. Business education at the university level must be a balance of theoretical and experiential education. The theoretical education provides a background of principles that have been applied over and over so that they have been thoroughly validated. At the same time the theoretical education provides an awareness of the ‘best practices’ at various organizations that have not yet been validated as universally true. These ‘best practices’ are particularly useful in turbulent and dynamic industries that may change too rapidly for their business models to be thoroughly validated. Experiential education is necessary to augment the theoretical education.
- Basile, Ashley** Master of Business Administration Pugsley Rm. 3:15 - 3:30  
*What Do MBA Students Really Want?*  
 Literature indicates universities seem to understand what employers want in a Master’s of Business Administration (MBA) program, but they do not appear to have asked prospective students. Just as business must do, the university must understand its customers’ wants and needs. Universities must find out what potential MBA students really want out of a program in order for the school’s program to grow and prosper. This presentation discusses Youngstown State University’s analysis of its customers. A validated survey was administered to a random sample of alumni, business professionals, and human resource directors in the counties surrounding YSU. The results were analyzed and recommendations were made to management of YSU’s MBA program.
- Belknap, Farrell** Mechanical Engineering James Gallery 2:00 - 2:15  
*Design of The Hammer: an Anti-Ram Vehicle Barrier*  
 In current society, strong security has become a high priority. The ability to restrict unauthorized vehicles from secured premises is desired. This study provides a design of an anti-ram vehicle barrier that will prevent a 6800kg (7.5 ton) vehicle, moving at 48km/hr (30mph) from entering a property. The proposed design consisted of two concrete-filled posts with a lateral plate stretching across one standard lane of traffic. A winch system was used to raise and lower the mechanism within 30 seconds. The model analyzed showed stresses within the model after an impact load was applied. This design utilizes a combination of a retractable plate and retractable post model. The computer models showed the design was safe. The challenge of this design was to meet all requirements set forth, while making a robust design. Some of these requirements included; the applicable standards of AISC, ASME, or AISI, withstanding extreme temperatures, and operating for 100,000 cycles. While safety was of utmost concern, ease of performance and manufacture were also important along with a low manufacturing cost. The goal of this design was to meet an overall manufacturing cost of \$140,000 per unit. In conclusion, methods of stress analysis and dynamics were used to verify the final design.



**Bolling, LeRonica**

Communication Studies

Coffelt Rm. 2:00 - 2:15

*Equal Rights for Women*

This analysis was presented as an assignment in a Critical Methods class. The process of the assignment was to select two other group members to work with and then pick a style of analysis to apply to a speech or other form of text. The speech chosen by our group was given by Shirley Chisholm and was addressed to Congress in 1969. The Equal Rights for Women speech was analyzed using three different styles. I specifically looked at a method that studies the use of the speaker's words to form attitudes and persuade actions in others. At this time the Women's Movement was in progress which was the driving force of the speech. She used the Women's Movement as a comparison to the Civil Rights Movement to show the similarities of the struggle between the two minorities. First I found terms that are used both frequently and intensely, then decided whether they are used positively or negatively. Doing so led to findings such as; negative "assumptions" being made against women, and there being a "need for equality." By examining these aspects one is able to deduce a theory of the rhetor's worldview. Concluding that Chisholm felt the way women were being mistreated needed to be stopped immediately. Knowing the struggle from both being a woman and an African American gave her a deeper reason to fight. Her strong will and beliefs lead her to make it as far as having a seat in Congress where she was the first African American women elected by the state of New York.

**Borovitcky, Michelle**

Food & Nutrition

Ohio Rm. 3:30 - 5:00

*Knowledge and Practices Related to Dietary Sodium*

The American Heart Association (AHA, 2008), reports that about 8 million Americans die each year from hypertension, and every third American has high blood pressure. They suggest that limiting sodium intake to 2,400 mg/day by avoiding salty foods and table salt can help control blood pressure. This study used a 15 item questionnaire to collect demographic data as well as evaluate YSU students' knowledge about sodium and health, eating habits that define sodium intake, and family history of chronic diseases impacted by sodium intake. Statistical analyses were performed using SPSS and ANOVA and t-tests were used to compare participants by ethnicity, family disease history, gender. Participants, n=172; 61% female; 83% Caucasian, 12% black; 61% with a family history of hypertension, were recruited from Kilcawley Center. The mean ( $\pm$  SEM) knowledge score (sodium content of foods) of Caucasians ( $9.85 \pm 0.21$ ) was significantly higher ( $p = 0.012$ ) than blacks' ( $7.8 \pm 0.58$ ). Female Sodium Risk Behavior scores ( $9.95 \pm 0.26$ ) indicated that they made significantly ( $p = 0.02$ ) healthier food choices than their male counterparts ( $10.57 \pm 0.42$ ). Although not statistically significant, there was a negative correlation between Sodium Knowledge and Behavior Risk scores ( $r = -0.15$ ). The results of this study indicate that there is room for improvement in sodium knowledge and food habits which other studies have indicated can reduce the onset and consequences of hypertension.

**Boulos, Samar**

Pre-Medicine

Ohio Rm. 8:30 - 10:00

*The Investigation of the use of Carbohydrate Mimetic MV-II-065 in the Prevention of Staphylococcus aureus Infection*

The bacterium Staphylococcus aureus is a predominant cause of hospitalized and community acquired infections. Due to its clinical frequency, antibiotics have been developed to treat this bacterium, however, due to over usage of such options, S. aureus has become increasingly resistant to current antibiotics. As it becomes more resistant, the imminent danger of this bacterium needs to be approached in ways other than the current sources. Alternative effective treatments must be developed to keep this bacterium from dominating patients suffering from other suppressed immunity infections who are more prone to acquiring this contagious infection that could easily become fatal. Through the development of carbohydrate mimetics for S. aureus capsules, we hope to obtain compounds that inhibit its capsule production. Capsule inhibition may make the bacterium susceptible to the immune response. Carbohydrate mimetics are drugs that have been created to mimic types 5 and 8 S. aureus capsules. We will test for drug effectiveness through an ELISA assay which will illustrate the presence or absence of the capsule. The mimetic of interest is MV-II-065, which has been shown to decrease antibody binding to capsule binding in type 8, however has not prevented binding within type 5. We hope to find information which will open the door to new and alternative treatments to prevent Staphylococcus aureus from continuing to gain power from its resistance to the exhausted current antibiotics.

**Brant, Troy**

Chemistry

Jones Rm. 11:00 - 11:15

*Geocaching: A New Approach to Learning Geosciences Subjects*

Geocaching is popular activity wherein individuals equipped with GPS (Global Positioning System) receivers set out to find hidden caches based on geographic coordinates provided through the website: [www.geocaching.com](http://www.geocaching.com). During the "Field Experiences in Geology" course held between March 5-12, 2008 on the remote Bahamas island of San Salvador, geocaching was applied to teaching and learning specific geoscience subjects. The remote and essentially undeveloped island of San Salvador provides nearly unlimited opportunities for teaching basic and advanced geoscience subjects including but not limited to coastal processes, environmental science, biodiversity, and human use of limited natural resources. The geocache sites were designed to provide the students with a self-directed learning experience. Each geocache site was based on a specific geoscience subject with pre-determined learning outcomes. In addition, an instructor-led exercise was developed to introduce the students to GPS navigation and compass orienteering. The results focus on the learning outcomes achieved in GPS and orienteering proficiency and one geocache site that dealt with impacts of hurricanes on the natural environment. The learning outcomes were evaluated using multiple choice style pre-exercise and post-exercise evaluation tools. Preliminary results indicate modest success in achievement of learning outcomes for the exercises evaluated.

**Brenner, Michael**

American Studies

Coffelt Rm. 2:15 - 2:30

*Furry Microculture*

There are many different groups within the United States; some of them are called 'subcultures'. These Subculture groups tend to be the focus of interest to those outside them. Goth, Biker, and Hip Hop are among the many varieties of subcultures. So too is something known to insiders as "Furry Fandom". Furry fandom has been noticed by some through shows such as CSI or magazines such as Vanity Fair. In both of these furies (members of furry fandom) are portrayed as sexual deviants who prefer to have sex while wearing animalistic body suits. Furies have also been suggested to be primarily gay males. Recently, an article in Hartford Advocate online called "Hell Hath No Furry" showed an opposite view, that furies are fairly normal people who have an interest in animals. The degree of this interest varies. There is a severe lack of peer-reviewed literature on the matter but this paper hopes to answer the questions: what is furry? What is the "average" furry like? If asked, what would your average furry want you to know about them?

- Brenner, Paul** History Pugsley Rm. 11:30 - 11:45  
*Revolt: The Late 19th Century and Press Treatment of Social Dissidents*  
 When we think of 1870 and 1880s America we are drawn to images of the occupation of the south or of mass industrialization. We think of California and the old west. What we do not think of is a nation teetering on the brink of internal breakdown, but that was exactly what occurred. In the mining fields of Pennsylvania, recent immigrants looking for their own slice of the American pie used violence to accomplish their goal. From 1875 on there were stories in the nation's press about the renegade miners doing what they please and killing at random those in their way. A decade later in Chicago there was an explosion as men and women gathered to protest violence used by police against striking workers the day before. The protest erupted into violence as police opened fire on the crowd after a bomb exploded. The ensuing newspaper coverage of these events make this a fascinating piece of American history. What did the papers think about what has happened? Were they the bastion of the underdogs or the tool of the government? Was there such a thing as a balanced portrayal of events? All these are questions which this paper seeks to answer.
- Brenner, Christina** Information Technology Humphrey Rm. 3:45 - 4:00  
*Smart Devices and Programming Them*  
 Smart Devices are used when it is impractical to carry a laptop or use a desktop. Visual Studio can create applications for over 200 different devices using a form of the Windows operating system called Windows CE. When you are designing the application for these devices it is different then when you design an application for a desktop or laptop. For one thing when you design an application for a smart device you cannot resize the design surface because it needs to fit a standard PocketPC device. There is limited size in the Title Bar and you cannot use the clear method for TextBox controls and instead need to assign an empty string to the Text property of a TextBox to clear the contents. There is another difference between writing an application for a PocketPC one thing is that it uses the Panel control, which is not used in writing applications for notebooks or desktops. It associates objects into groups such as RadioButton objects, it does not use GroupBox control. These panel controls can have scroll bars if necessary and can be resized by dragging the handles. These panel controls are located in the ToolBox, Device Containers tab. In this presentation I will show how Visual Studio will work on the PocketPC to make sure that it works, I will use the Software Development Kit (SDK) in designing the application to simulate the PocketPC skin and to show how the program will look on the PocketPC.
- Briedenbaugh, Caralisa** Biology Coffelt Rm. 3:30 - 3:45  
*Utilizing Proteomics to Investigate Morphogenesis in Wangiella dermatitidis*  
 Wangiella dermatitidis is a melanized, pathogenic, polymorphic fungus that in vitro grows primarily in a yeast form, but is capable of morphological changes resulting in growth as either filamentous hyphae or swollen, multicellular bodies. The latter morphology strongly resembles the in vivo form of tissues infected with W. dermatitidis. Each of these three morphologies can be readily induced through varying growth conditions of the wild-type strain or by culture of developmental mutants. The conversion of the yeast phase to the multicellular growth form was the focus of the present study. Whole-cell, protein profiles of the wild-type strain and the temperature-sensitive mutant, Mc3, were developed following incubation at both 25°C and 37°C. At both temperatures, the wild type grew as yeast cells, whereas strain Mc3 also grew as a yeast at 25°C, but formed the multicellular growth form at 37°C. Protein profiles showed consistency in landmark proteins found within all four study groups, as well as temperature dependent and strain dependent proteins. Fifty protein spots were excised and sequenced by capillary-liquid chromatography-nanospray tandem mass spectrometry. A Mascot search of established databases established putative identities of these proteins. The results presented in this study indicate the relevance of proteomics as a tool in interpreting the morphological and physiological conditions of phase changes exhibited in W. dermatitidis.
- Brookman, Tessa** Geography Jones Rm. 10:45 - 11:00  
*Determining Paleowind Direction of Eolianites on San Salvador, Bahamas*  
 Direction of paleowinds that deposited Pleistocene-Holocene eolianites was investigated on San Salvador, Bahamas as part of the Field Investigation in Geology (GEOL 3720) course at Youngstown State University. 487 measurements of cross strata were collected from exposures of eolianites at 11 locations across the island. Paleowind directions were calculated using the cross strata measurements and plotted as rose diagrams using StereoWin 1.2 software. The calculations and plots indicate onshore paleowinds with north, south, east, and west directions deposited the eolianites throughout the island. These newly calculated onshore paleowind directions contradict Caputo (1995) that concluded the eolianites were deposited by a westward paleowind direction. The larger number of measurements collected from more locations permitted a more reliable interpretation of paleowind direction for this study than Caputo (1995).
- Buckler, Thomas** Individualized Curriculum Program Humphrey Rm. 3:30 - 3:45  
*Mapping Poland Municipal Forest with GPS and GIS*  
 Poland Municipal Forest is a popular pedestrian forest located in the village of Poland, Ohio. Visitors can pickup a paper map at its entrance, but that map is outdated. It labels trails that no longer exist, and new trails have been developed since its publication. In order to fix this problem, GPS receivers were paired with PDAs running mobile GIS software to create a new map. Positional readings were recorded in real time overlaid on georectified photography. Currently existing trails and points of interest were then plotted in a georeferenced digital layout. The result is a more accurate and up-to-date map that is easily editable.

- Campana, James** Food & Nutrition Ohio Rm. 3:30 - 5:00  
*Knowledge and Practices Related to Dietary Sodium*  
 The American Heart Association (AHA, 2008), reports that about 8 million Americans die each year from hypertension, and every third American has high blood pressure. They suggest that limiting sodium intake to 2,400 mg/day by avoiding salty foods and table salt can help control blood pressure. This study used a 15 item questionnaire to collect demographic data as well as evaluate YSU students' knowledge about sodium and health, eating habits that define sodium intake, and family history of chronic diseases impacted by sodium intake. Statistical analyses were performed using SPSS and ANOVA and t-tests were used to compare participants by ethnicity, family disease history, gender. Participants, n=172; 61% female; 83% Caucasian, 12% black; 61% with a family history of hypertension, were recruited from Kilcawley Center. The mean ( $\pm$  SEM) knowledge score (sodium content of foods) of Caucasians ( $9.85 \pm 0.21$ ) was significantly higher ( $p = 0.012$ ) than blacks' ( $7.8 \pm 0.58$ ). Female Sodium Risk Behavior scores ( $9.95 \pm 0.26$ ) indicated that they made significantly ( $p = 0.02$ ) healthier food choices than their male counterparts ( $10.57 \pm 0.42$ ). Although not statistically significant, there was a negative correlation between Sodium Knowledge and Behavior Risk scores ( $r = -0.15$ ). The results of this study indicate that there is room for improvement in sodium knowledge and food habits which other studies have indicated can reduce the onset and consequences of hypertension.
- Canacci, Ronald** Computer Science Humphrey Rm. 4:00 - 4:15  
*QUEST Website Re-design with Management Portal*  
 During the Fall of 2006, the need for a new QUEST online registration form presented itself. Working on the project, I learned that day-to-day tasks regarding the management of the QUEST event were very time consuming for Director Dr. Jeffrey Dick. After some discussion, we found that some web-based software tools could be built to automate many QUEST processes. In turn, I decided to make my Computer Science Senior Project focus on the creation of web-based solutions for QUEST's needs. I developed a content management system (CMS) which allows QUEST administrators to easily maintain the QUEST website and the registration form. The CMS features include registrant tracking and registration management. The CMS also gives QUEST administrators the ability to make live content changes to the QUEST website and also allows for the creation of new web pages on the fly. All of these features are accessible through a user-friendly web interface giving the user powerful tools without having to use any special website software. The QUEST CMS was developed using PHP, HTML, JavaScript, and CSS and is supported by an SQL database. Professor Robert A. Hogue served as my senior project supervisor and provided support that was instrumental in completing this project. The project was completed during Fall Semester of 2007 and went live shortly thereafter.
- Cannon, Nichole** English Humphrey Rm. 1:45 - 2:00  
*Analyzing Arguments in Television Dramas*  
 One staple of American television dramas is arguments, possibly because this reflects American life. People often argue, whether it be with peers, colleagues, parents, children, or significant others. In order to conduct research on arguments in television dramas, we will watch a full season of two different television dramas. The dramas to be viewed are Gilmore Girls (Season Five) and The O.C. (Season Two). Both shows aired during the 2004-05 season, and both have similar audiences of teenagers and college students. We will aim to collect and record at least 75-80 arguments that meet our criteria to analyze in depth. We will focus specifically on initiation of arguments. How do we know an argument has begun? What language is used to start arguments? Is the language different for males than for females? Does this reflect or affect argument initiation in American society? We hope to analyze this through the completion of the project.
- Carlson, Philip** Mechanical Engineering James Gallery 10:30 - 10:45  
*An Inquiry into Magnetic Interactions and Principles for use in a Permanent Magnet*  
 Magnetic motors have been around for a long time. However, the limitations have been to use magnets and electrical fields to produce purely rotational motion. It is desirable to have a motor that is able to turn rotational motion into linear motion, and vice versa. With the proposed magnetic motor's revolutionary design, this has been achieved using two different magnets, linear and rotational, with a voice coil acting as a motor. The current state of design has been less than desirable, and very little engineering analysis has been performed on this design. While the concept is brilliant, it is nowhere near production ready. Engineering judgment was used in determining current weak points within the design. There are several key components that are to be improved. First and foremost, a good understanding of magnets is needed to fully understand how to gain the most efficient energy output. Realizing that magnets produce the strongest field when placed at a  $45^\circ$  angle, it became quite apparent that the rotational magnets should have the same inner diameter as the linear magnet's outer diameter. Using these parameters, the desired effect was achieved. The voice coil design was improved. With the current design, it is easy to misalign the motor itself, which inadvertently shorts out the voice coil. Also, a coupler was used to connect the voice coil to the linear shaft. By placing two voice coils on the guide of the outer linear shafts, shorts that may occur were avoided.
- Castle, Chelsye** Mechanical Engineering James Gallery 3:30 - 3:45  
*Anti-Truck Barrier*  
 The inability to protect the entrance and exit of a secure facility poses a serious threat to safety of the employees and property. The solution for securing unwanted access was the Rapid Anti-Truck Terrorist Remedy and Perimeter Protector (R.A.T. T.R.A.P.P). The Anti-Ram Vehicle Barrier secured a 3 meter (10 ft.) wide lane of traffic in one direction from a 6,800 Kg (15,000 lbm) truck traveling at 50 Km/h (30 Mph) from penetrating less than 1 m (3 ft.). The Rapid Anti-Truck Terrorist Remedy and Perimeter Protector consisted of a large steel counter-weighted plate operated by a chain drive powered by an electric motor. The counterweight raised the plate quickly, while the chain drive lowered the plate at the command of the operator.
- Chaney, Victoria** Social Studies Bresnahan II Rm. 1:30 - 1:45  
*Connecting Planetarium Shows to Classroom Instruction*  
 This presentation will outline a student's work on a grant that YSU received from NASA. The student, Victoria Chaney, was chosen to create lesson plans that correlate to a planetarium show that YSU is developing based on the book "A Briefer History of Time" by Eric Schulman. These lesson plans will be distributed along with the completed program. Likewise, Ms. Chaney will discuss the importance of the project and how she used Taskstream educational technology to create these adaptable plans for classroom instruction. The contents of the lessons will be briefly discussed as well.

- Chari, Sangeetha** Chemistry Ohio Rm. 1:30 - 3:00  
*Hydride Generation and Laser Spectroscopy for Trace Measurements of Sb and Se*  
 Hydride generation (HG) sample introduction increases the sensitivity for certain metal species by converting them to their gaseous forms for measurement by atomic emission or atomic fluorescence techniques. In this work, measurement methods have been developed for the trace analysis of antimony (Sb) and selenium (Se) using HG coupled to laser induced fluorescence (LIF) or laser induced breakdown spectroscopy (LIBS) detection techniques. In the LIF studies, aqueous samples of Sb are subjected to HG and the Sb hydride is carried to the flame which acts as an atomization source. The wavelengths of absorption and emission for Sb were found to be 213.2 nm and 259.8 nm, respectively. The intensity of fluorescence was plotted against the concentration of Sb used. It was found that the intensity was linearly related to the concentration of Sb in the range 0.3-10 ppb. The limit of detection (LOD) was found to be 0.003 ppb. A similar technique has been used for the determination of Se in aqueous samples using LIBS. In this approach, plasma instead of a flame is used to excite Se atoms and the atomic emission is measured at a maximum wavelength of 196.1nm. Using this wavelength, a calibration curve was plotted for intensity of emission against different concentrations of Se. From the calibration curve, the slope and LOD have been determined. The results of the studies are being evaluated to show the relative performance of each technique.
- Ciccione, Bruce** Biology Ohio Rm. 8:30 - 10:00  
*Flora of Poland Municipal Forest*  
 In 1935 Mrs. Grace Butler donated 212 acres of land to the Poland Village under the stipulation that the land be preserved as a wildlife sanctuary. Since that original donation, Poland Municipal Forest has grown to its present size of 242 acres. The park is a popular wildflower site and contains a diverse range of flora one of which, the Globeflower, is currently listed as state endangered. The park is widely used by the public, and is surrounded by an urban setting and housing developments. These factors subject the native vegetation to constant pressures and the threat of extirpation. This study presents the holdings of the Herbarium of Youngstown State University of the Poland Municipal Forest. These records will serve as baseline data for future research in the forest.
- Ciferno, Natalie** Psychology Coffelt Rm. 1:45 - 2:00  
*Attractiveness and Humor: Does one Help the Other?*  
 Twenty slides of faces were presented to the participants. Half of the faces were attractive and half were unattractive. Half of those faces were presented with a humorous saying and the other half with a neutral saying. This study examined the effect of humor on attraction, getting to know a person better, and dating, along with what is the relative importance of attractiveness and humor for first impressions. Participants were asked; How attractive do you find this person? Would you want to get to know this person better? and If given the opportunity, would you consider dating this person? A 7 point Likert scale to record responses was given at the beginning of the study. All data are confidential and anonymous.
- Claypoole, Sherri** Forensic Science Ohio Rm. 1:30 - 3:00  
*Why Does My Wine Taste Like Dirt?*  
 Cabernet Sauvignon, Merlot, and Sauvignon Blanc wines often contain methoxypyrazines and at certain concentration levels, they adversely affect the taste and aroma of the wine. An experimental procedure was developed to quantify the levels of three specific methoxypyrazines contained in various wine samples using solid-phase microextraction gas chromatography mass spectrometry (SPME-GC-MS).
- Coleman, Patrick** Mechanical Engineering James Gallery 3:45 - 4:00  
*PB & J Vehicle Barrier*  
 In today's society, traffic is in abundance over all parts of the world. Considering this, some facilities require the restriction of vehicle access. As a solution, a retractable bollard design was proposed. The PB & J barrier was named after the inventors of the barrier. The design entails that the barrier block one lane of traffic from a 6800 kg (15,000 lb) vehicle traveling at 48 kph (30 mph). The design was modified to fit various environmental constraints. It was engineered to withstand temperature fluctuations of -7 °C to 60 °C (-20 °F to 140 °F) and have the ability to resist natural reoccurring threats, like water (ice, snow etc). One of these preventions implemented was a water-flow system that effectively minimized moisture contact. Another design constraint applied was efficient energy consumption and a life expectancy of twenty years. The power supplied was between the range of 110 and 220 volts using a capable electric motor. To reduce life diminishing hazards, the barrier was made retractable into the ground encased in a reasonably sealed cavity. An advantage to using the vehicle barrier was that the installation process was kept in mind during the design process. The unit can be conveniently positioned directly into the ground all at once. The steel "box" structure with barrier equipment already affixed was lowered into the ground. The fully retractable bollard design was ensured to conform to necessary standards.
- Corman, Jason** Mechanical Engineering James Gallery 1:45 - 2:00  
*Design and Evaluation of "El Matador" Anti-Ram Barrier*  
 In recent years, new threats have compromised the security of various facilities in the United States. One option to enhance security is the addition of an anti-ram vehicle barrier, which has applications of safety and security for pedestrian walkways, traffic control, etc. In the situation of using these barriers to control traffic, there are a few different design options. The most widely used design for security stops and gateways is the typical security hub with a wooden/plastic rotating arm. Although very effective for controlling the flow of traffic, this design is not very security and safety efficient. An alternative design for these traffic control barriers is the retractable bollard. These reinforced posts would not only manage traffic flow, but under design and certification requirements, they must be able to stop a 6,800 kg (15,000-lbm) vehicle traveling at 48 km/h (30 mph) within 1 m (3 ft). This would ensure the safety all people and property on the other side of the barrier. The presentation outlines and discusses the design of this retractable bollard system. Design requirements based on component regulations and limitations are further specified, as well as methods of evaluation, including: safety, maintainability, performance, installation, cost, service life, environmental conditions, and appearance. The final design of "El Matador" and its potential problem areas are also concluded and summarized.

- Cowan, Jeremy** Chemistry Ohio Rm. 10:30 - 12:00  
*The Scanning Electron Micrograph*  
 The Cambridge Stereoscan 200 Scanning Electron Microscope (SEM) is able to achieve up to 200,000X magnifications in conductive samples. The SEM uses a concentrated beam of electrons gathered from a tungsten filament to collect high resolution micrographs. The high power microscope (30 keV) is able to obtain topography, morphology, composition and crystallographic information. The SEM houses three different detectors. One of which is a secondary electron (SE) detector that is capable of gathering surface features and texture information. The second is a back-scattered electron (BSE) detector and it is able to gather composition as well as topographic information. Lastly, the energy dispersive x-ray microanalysis (EDAX) detector permits chemical analysis using x-rays and powerful spectroscopy software. The EDAX software uses a comparison of the relative intensities of x-ray peaks to determine the relative concentrations of each element in the specimen. Using all of these features has allowed us to perform microanalysis and material characterizations for local companies. Our work helps these companies to become more competitive through the use and implementation of technology and facilities of Youngstown State University's Center for Transportation and Materials Engineering (CTME).
- Culbertson, Kelly** Chemistry Ohio Rm. 1:30 - 3:00  
*Conformational Analysis Using Chem3D: Cyclohexanes to Synthetic Carbohydrates*  
 In Organic Chemistry 3719 and 3720 we cover the basics of how organic molecules adapt lowest energy shapes, or conformations, based on steric effects and the general attempt within molecules to avoid destabilizing interactions. For the Honors component of these classes we have taken the ideas further and, in 3719, used the Chem3D program (from CambridgeSoft) in order to model various cyclohexane derivatives. This exercise allowed us to see that the idealized form of a ring, for example in a cyclohexane derivative, is perturbed by adding bulky groups in axial positions. Often the ring adopts a shape that is quite far from the ideal chair conformation. In Chemistry 3720 we have taken these ideas further and studied the minimized shapes of several synthetic carbohydrate analogs that have been made at YSU. This presentation will detail our work with Chem3D and will include conclusions about the preferred geometries of the carbohydrate mimics.
- Cunningham, Krista** Pre-Pharmacy Ohio Rm. 1:30 - 3:00  
*Conformational Analysis Using Chem3D: Cyclohexanes to Synthetic Carbohydrates*  
 In Organic Chemistry 3719 and 3720 we cover the basics of how organic molecules adapt lowest energy shapes, or conformations, based on steric effects and the general attempt within molecules to avoid destabilizing interactions. For the Honors component of these classes we have taken the ideas further and, in 3719, used the Chem3D program (from CambridgeSoft) in order to model various cyclohexane derivatives. This exercise allowed us to see that the idealized form of a ring, for example in a cyclohexane derivative, is perturbed by adding bulky groups in axial positions. Often the ring adopts a shape that is quite far from the ideal chair conformation. In Chemistry 3720 we have taken these ideas further and studied the minimized shapes of several synthetic carbohydrate analogs that have been made at YSU. This presentation will detail our work with Chem3D and will include conclusions about the preferred geometries of the carbohydrate mimics.
- Cunningham, Robert** Mechanical Engineering James Gallery 2:30 - 2:45  
*Hydraulically Operated Gate Security System*  
 Unwanted entrants and terrorists are always a concern at places of high security. Terrorists may try to force entry into a secured complex with the use of large vehicles with the notion that the large size of the vehicle will ensure successful entry into the desired location. This requires higher security at the vehicle entrance portals of many government buildings, military bases, and other secure buildings. Often, bollard type barriers are used at the entranceways for this purpose. A design was generated for a "pop-up" type bollard named "Pneumatically Operated System of Traffic Control Barrier" (P.O.S.T. Control Barrier). This design was created to span one lane of traffic 3 m (10 ft). A series of five posts (two stationary and three operable) provided the necessary protection. The three operable bollards protruded and retracted into the ground via hydraulic cylinders below the surface. The unit was designed to exceed American crash rating, K4-L3, which means a 6800 kg (15000 lbm) vehicle traveling at 48 kph (30 mph) penetrated the barrier no more than 0.9 m (3 ft). Government testing will certify the barrier with this rating. Energy and stress calculations confirmed that this barrier would be able to withstand the impact and uphold the required rating, thus ensuring adequate security at any desired location.
- Darling, Julia** Chemical Engineering Ohio Rm. 10:30 - 12:00  
*Separation of Oil and Water Emulsion of Effluent Lubrication Streams from a Copper Mill*  
 In the Copper Mill Industry of rolling and forming copper, lubricants are needed to assist the machinery in order to form copper. Thus, a very chemically stable emulsified lubricant is needed. After the copper has been formed, the lubricant is desired to be purified. This necessitates breaking of the emulsion to recover water and oil separately. This presentation of a full-scale and bench-scale chemical engineering solution solves the problem of separating the emulsified lubricant to obtain the most amount of water possible from the separation process.
- Dasu, Anita** Master of Science in Chemistry Ohio Rm. 1:30 - 3:00  
*Novel Mixed-Anion Colossal Magnetoresistive Materials*  
 Relative to oxides, mixed anion materials containing combinations of N and/or F dissolved in the oxide lattice offer a variety of advantages, including smaller band gaps due to the presence of nitrogen and greater flexibility in terms potential cations and their possible range of oxidation states. These factors, coupled with the relatively lowered symmetry (possibly due to anion ordering), suggest enhanced dielectric, magnetic, and/or optical properties for the targeted materials. The goal of this project is to synthesize a mixed-anion analog of (Ca, La) MnO<sub>3</sub>, which is well known for colossal magnetoresistive properties due to the presence of both Mn<sup>3+</sup> and Mn<sup>4+</sup> in the lattice. Past attempts to directly synthesize novel CaMn<sub>x</sub>O<sub>y</sub>F<sub>z</sub> materials from binary Mn and Ca compounds and proposed redox reactions in N<sub>2</sub> have failed. These attempts will be summarized and a new approach involving ammonolysis of CaMnO<sub>3</sub> followed by fluorination of the product to give the novel compound Ca<sub>2</sub>(Mn<sup>3+</sup>,Mn<sup>4+</sup>)O<sub>5</sub>F will be discussed.

- Davenport, Gary** Individualized Curriculum Program Humphrey Rm. 2:15 - 2:30  
*The Color Purple? Gay/Straight Descriptor Correspondence in North-East Ohio*  
 Robin Lakoff's comment in 1975 about gay men's language use matching women's was one small quip before the deluge of gay language and speech research that followed it. This study returns to Lakoff's comment and poses the question of whether gay men's word choice matches women, asking anonymous subjects to name colors presented on swatches and self-identify their sexual preference. An expectation of gay male/straight female correspondence is expected due to stereotype and Lakoff et al's theories regarding gender, power, and language but sexual identity has changed since drastically since the Seventies. This project will identify some of those changes relevant to speech and language, document the process of gay language research in the context of sociolinguistics, and review the collected data in light of several important points intersecting the above topics.
- Davenport, Gary** Individualized Curriculum Program Humphrey Rm. 11:30 - 11:45  
*Wife: The Life & Times of a Formerly Dirty Word*  
 Wife, though it today neutrally designates a spousal partner, has a salacious past. From its earliest Indo-European origins, the word has represented ideas about shame, vulgarity, gender, and sex, making it for many cultures an unspeakable term. So how did wife change from a taboo utterance to something religions have ritualized in marriage and Henny Youngman used to comment on the married life with? The story of wife begins some eight thousand years ago through dozens of different languages and cultures before ending up where it is today, and it hasn't stopped there either. Wife continues to change its meaning in the modern Germanic languages even now as we speak with it.
- Davner, Jim** Mechanical Engineering Ohio Rm. 10:30 - 12:00  
*The Scanning Electron Micrograph*  
 The Cambridge Stereoscan 200 Scanning Electron Microscope (SEM) is able to achieve up to 200,000X magnifications in conductive samples. The SEM uses a concentrated beam of electrons gathered from a tungsten filament to collect high resolution micrographs. The high power microscope (30 keV) is able to obtain topography, morphology, composition and crystallographic information. The SEM houses three different detectors. One of which is a secondary electron (SE) detector that is capable of gathering surface features and texture information. The second is a back-scattered electron (BSE) detector and it is able to gather composition as well as topographic information. Lastly, the energy dispersive x-ray microanalysis (EDAX) detector permits chemical analysis using x-rays and powerful spectroscopy software. The EDAX software uses a comparison of the relative intensities of x-ray peaks to determine the relative concentrations of each element in the specimen. Using all of these features has allowed us to perform microanalysis and material characterizations for local companies. Our work helps these companies to become more competitive through the use and implementation of technology and facilities of Youngstown State University's Center for Transportation and Materials Engineering (CTME).
- Delfosse, Christina** Master of Arts in English Humphrey Rm. 10:30 - 10:45  
*Christ as a Christian: Reading The Dream of the Rood as a Christian Poem*  
 For years, critics have argued that Christ as a character in The Dream of the Rood exemplifies the traditional Germanic pagan hero. Many tend to look at the various instances of battle and war imagery in the poem and relate this to other common Germanic heroes, such as Beowulf. Most see Christ as being a heroic battle leader, waging war on those opposing him, dying a glorious death on the "battlefield," and ultimately conquering his enemies through his own death. What many have overlooked that I wish to focus on, however, is that the poet depicts Christ, much like the character of the cross, as a more "modern" Christian hero/martyr rather than the traditional Germanic pagan poetic epic warrior hero, call it what one will, through diction and action.
- DelFraino, Mark** Physics Coffelt Rm. 10:45 - 11:00  
*Comparison of SiC Schottky Diodes with Ni and Ni<sub>2</sub>Si Contacts*  
 Silicon carbide (SiC) has attracted tremendous amount of research interest because of its excellent properties for making electronic devices that can operate in adverse conditions of high temperature and high power. One such device is the Schottky barrier diode (SBD). The Schottky metal contact currently used in commercial SiC Schottky barrier diodes is nickel (Ni), which is then thermally treated to yield nickel silicide (Ni<sub>2</sub>Si). The heat treatment not only results in a chemical reaction between Ni and SiC which consumes substantial part of the SiC and could be undesirable, but the reaction also sets a limit to the temperature above which the device could fail. We propose using Ni<sub>2</sub>Si directly as the metal contact in order to reduce the interfacial reaction and perhaps increase the operational temperature of the SBD. In this presentation, we will show results of the electrical and thermal properties of SBD fabricated using Ni and Ni<sub>2</sub>Si. These contacts will be deposited by magnetron sputtering and the electrical properties will be obtained from current-voltage and capacitance-voltage measurements. The thermal properties will be determined from a series of annealing in our rapid thermal processor and in our vacuum-annealing chamber.
- DeMar, Ben** Mechanical Engineering James Gallery 11:15 - 11:30  
*Heavy Capacity Lathe for Three Axis Milling Machine Upgrade*  
 Manufacturers of metalworking, strip processing, and extrusion equipment have a need for the capability to perform cylindrical and eccentric turning in-house due to increasing lead times for outside manufacturing and increasing product sizes, especially in the extrusion industry. To meet these needs, a three-axis milling machine was upgraded to a four-axis turning center by adding motor-driven spindle supports for work piece rotation. The spindle supports, much like the headstock and tailstock on a common lathe, were designed to hold and turn cylindrical work pieces of up to 163,201 kg (74,012 lbm) with speeds no higher than 50 rpm. Other requirements included a large electrically driven motor, an emergency braking system, gear reduction, precise positioning feedback, mounting equipment on both supports, and independent adjustment capabilities on the tailstock. The end product was an oversized lathe. Calculations were performed in all critically stressed areas of these supports to design sufficient frames and shaft housings. To meet the requirements for such a machine meant that the bearings needed to be capable of taking these high loads while maintaining accuracy in the machining process. To overcome the forces induced by the cutting tool as well as from the work piece inertia, the motor would need to be high in power so that in conjunction with gear reduction, large torques could be produced.

- Denton, David** Master of Physical Therapy Bresnahan II Rm. 11:00 - 11:15  
*Resistive Exercise to Decrease BMI, Increase Lean Body Mass and Improve Self Esteem*  
 Purpose was to assess the impact of a previously developed protocol for strength training on an overweight adolescent to determine changes in strength, BMI, lean body mass and self esteem. Rationale: Since the late 70s, the number of adolescents who are overweight has more than tripled. It is known that 80% of obese adolescents go on to become obese adults. Adult obesity has been linked to depression, cardiovascular mortality and morbidity. Description: An overweight male met inclusion criteria of BMI over 24.5. The subject underwent a strength training program that included 10 exercises. Measurements of strength via the hand held myometer, BMI, lean body mass and self esteem via the Children's Depression Inventory were taken throughout. Observations: BMI values ranged from 27.4-27.9 placing the BMI at the 96th percentile. Muscular strength of all muscle groups increased as a result of the strengthening program. The Children's Depression Inventory showed improved self esteem. Lastly, in Lean Body Mass, the subject went from overweight in the % body fat chart to average category by the end of the study. Discussion: The implementation of a strength training program demonstrated that strength training had positive effects on strength, lean body mass and self esteem for an overweight adolescent. Conclusion: Decreased BMI, increased lean body mass and improved self esteem was observed in an adolescent who completed a resistive exercise program.
- Detec, Rachel** Criminal Justice Jones Rm. 4:45 - 5:00  
*The Impact of Police and Jail Population on the Incidence of Homicide*  
 This set of information has been part of an ongoing longitudinal analysis of homicides in Youngstown, Ohio. In this particular study, I decided to just look at the homicide rates and the daily population of the jail through the years 1999 to part of 2007. I then took a look at a period or periods of time in order to distinguish whether or not there was a relationship between the two variables. The analysis will show whether there is a correlation between certain time frames throughout the year and the homicide rate.
- Di Martino, Elyse** Food & Nutrition Ohio Rm. 3:30 - 5:00  
*Current Food Trends and Eating Habits in the Mahoning Valley*  
 Fast, convenient, healthy; more meals at home using convenience items; and new exotic flavors are some of the food trends predicted for Americans over the next decade by food marketing experts (AGMRC, 2008). Consumer preferences drive the food industry and the marketing of trend-current products can equally shape consumer purchasing behaviors (USDA, 2008). Mahoning Valley residents (n = 100) were surveyed to ascertain their awareness of and participation in current and past food trends, and sources of information that influence food behaviors. As a significant source of food and nutrition information, more female participants (71%) than males (50%) selected print media, while more males (57%) than females (48%) selected the internet. More females (43.2%) than males (35.7%) reported currently being on some form of modified diet. Low carbohydrate (34%), low fat (27%) and low calorie (11%) were the forms of diets most often reported by women, while high protein (29%), low carbohydrate (28%), low fat (21%) were those reported most often by males. Our results suggest that males and females have different influences on food behaviors and when education is aimed at them, may be better reached by different sources of information.
- DiGennaro, Victoria** Psychology Coffelt Rm. 4:00 - 4:15  
*Ouch, that's cold!: A Protocol to Study Pain in Response to Cold Stimuli*  
 There has been much research done in studying responses to pain caused by heat and mechanical stimuli but little research has been done studying pain caused by cold stimuli. In order to study cold-related pain responses and create data that is easily reproduced and generalized, an effective protocol must be developed. This study will attempt to develop that protocol by working with fifteen Sprague-Dawley rats and a Peltier cooled cold plate (TECA Chicago, IL). All of the rats will undergo two conditions in order to distinguish behavioral differences between a cool temperature (15 degrees Celsius) and a cold, painful temperature (0 degrees Celsius). The goal and anticipated outcome of this study is to have a set protocol in distinguishing behavioral differences between painful and non-painful cold stimuli in the rats. Should an effective protocol be developed, subsequent research employing that protocol can vastly impact medicine and patients suffering from cold-related pain responses.
- Donnadio, Tammy** Mechanical Engineering James Gallery 4:45 - 5:00  
*The Great Moonbuggy Competition: Reverse Pedaling and Frame Aspects*  
 This presentation covers the reverse pedaling and frame aspects of the redesign. Every year a group of engineering students designs a moonbuggy in order to prepare it for The Great Moonbuggy Competition in Huntsville, Alabama. The competition was created to provide students an opportunity to gain a hands-on engineering experience, in which the team will encounter problems similar to ones the original moonbuggy team from the Apollo Missions encountered. In order to replicate the original moonbuggy mission, the race consists of an environment that resembles a lunar terrain. Different obstacles such as craters, rocks, inclines, lava ridges, and lunar soil throughout the course will test the design and durability of the buggy. This year the moonbuggy was designed to improve on last year's design and place higher in competition. After careful analysis of the moon buggy, the needed improvements were: 1) to reverse the rear pedaling system, 2) to improve the design of the hub box, and 3) to add hydraulic brakes. Research was then completed in order to maximize the effects of these changes. In order to reverse the pedaling system, it was decided that new sprockets and chains were needed. The current ones were either bent or improperly positioned. Three deraileurs/tensioners were added to enable the reverse pedaling to occur at the rear of the vehicle.
- D'Orio, Madeline** Pre-Medicine Ohio Rm. 1:30 - 3:00  
*Conformational Analysis Using Chem3D: Cyclohexanes to Synthetic Carbohydrates*  
 In Organic Chemistry 3719 and 3720 we cover the basics of how organic molecules adopt lowest energy shapes, or conformations, based on steric effects and the general attempt within molecules to avoid destabilizing interactions. For the Honors component of these classes we have taken the ideas further and, in 3719, used the Chem3D program (from CambridgeSoft) in order to model various cyclohexane derivatives. This exercise allowed us to see that the idealized form of a ring, for example in a cyclohexane derivative, is perturbed by adding bulky groups in axial positions. Often the ring adopts a shape that is quite far from the ideal chair conformation. In Chemistry 3720 we have taken these ideas further and studied the minimized shapes of several synthetic carbohydrate analogs that have been made at YSU. This presentation will detail our work with Chem3D and will include conclusions about the preferred geometries of the carbohydrate mimics.

- Dull, Jessica** Environmental Studies Ohio Rm. 8:30 - 10:00  
*Eavesdropping in Plants: A Test of the Biochemical Recognition Hypothesis*  
 Allelopathy is the release of biologically active chemicals by one plant that inhibits the germination or growth of other plants. Traditionally, allelopathy has been viewed as a form of competition, where toxic plant chemicals disrupt the metabolism of recipient plants, thereby reducing their growth or germination. However, there is mounting evidence that phytochemical-induced germination inhibition could be adaptive and may not be a consequence of toxins. That is, there are benefits for a seed to chemically recognize a potential competitor and defer germination until better conditions exist. This Biochemical Recognition Hypothesis (BRH), formalized by Renne et al. (2004), challenges the allelopathy paradigm but remains untested. A key requisite for the biochemical recognition of neighboring plants by seeds is frequent ecological interactions among co-occurring species. We collected seeds of native species from Argentinean and North American grasslands and assessed whether phytochemicals from co-occurring plants exhibited greater germination reduction than phytochemicals from species that have had no historic association. Preliminary evidence partly supports the BRH. This project explicitly investigates evolutionary relationships among plant species, provides additional information on the consequences of non-native, invasive plants to those that are native, and may identify an important mechanism structuring plant communities.
- Durse, Nicholas** Mechanical Engineering James Gallery 2:30 - 2:45  
*Hydraulically Operated Gate Security System*  
 Unwanted entrants and terrorists are always a concern at places of high security. Terrorists may try to force entry into a secured complex with the use of large vehicles with the notion that the large size of the vehicle will ensure successful entry into the desired location. This requires higher security at the vehicle entrance portals of many government buildings, military bases, and other secure buildings. Often, bollard type barriers are used at the entranceways for this purpose. A design was generated for a "pop-up" type bollard named "Pneumatically Operated System of Traffic Control Barrier" (P.O.S.T. Control Barrier). This design was created to span one lane of traffic 3 m (10 ft). A series of five posts (two stationary and three operable) provided the necessary protection. The three operable bollards protruded and retracted into the ground via hydraulic cylinders below the surface. The unit was designed to exceed American crash rating, K4-L3, which means a 6800 kg (15000 lbm) vehicle traveling at 48 kph (30 mph) penetrated the barrier no more than 0.9 m (3 ft). Government testing will certify the barrier with this rating. Energy and stress calculations confirmed that this barrier would be able to withstand the impact and uphold the required rating, thus ensuring adequate security at any desired location.
- Elias, Jaelyn** English Humphrey Rm. 1:45 - 2:00  
*Analyzing Arguments in Television Dramas*  
 One staple of American television dramas is arguments, possibly because this reflects American life. People often argue, whether it be with peers, colleagues, parents, children, or significant others. In order to conduct research on arguments in television dramas, we will watch a full season of two different television dramas. The dramas to be viewed are *Gilmore Girls* (Season Five) and *The O.C.* (Season Two). Both shows aired during the 2004-05 season, and both have similar audiences of teenagers and college students. We will aim to collect and record at least 75-80 arguments that meet our criteria to analyze in depth. We will focus specifically on initiation of arguments. How do we know an argument has begun? What language is used to start arguments? Is the language different for males than for females? Does this reflect or affect argument initiation in American society? We hope to analyze this through the completion of the project.
- Emig, Andrew** Electrical Engineering James Gallery 9:45 - 10:00  
*Stiffness Differences between the Fingers of the Dominant and Non-Dominant Hands*  
 Most people rely on a dominant hand, i.e. left hand, for daily activities. Understanding the differences between the biomechanical features of dominant and non-dominant hands would provide insight into the effects of frequent usage on flexibility and stability of joints. Prior studies have focused on the effects of different diseases and injuries on finger stiffness. Little information appears to focus on the finger stiffness differences between dominant and non-dominant hands. The purpose of our study will be to examine the differences in stiffness between the [index] fingers in the dominant and non-dominant hands of adults. The respective finger was placed in a splint and mechanical loading was applied [perpendicularly] to the [middle] knuckle of the finger towards the palm of the hand. The controlled displacement loading (triangle wave) was applied via a lever arm controlled by an electric motor. The motor is voltage controlled by a digital to analog converter which is, in turn, controlled by a computer program, "Spike2." The force applied divided by the distance moved was determined as the stiffness of each finger. Three different trials of each type of experiment was performed on the subjects. Our presentation will outline the setup and background of our experiment, as well as results and conclusions of the work.
- Fagan, Diana** Sigma Xi Ohio Rm. 1:30 - 3:00  
*Carbohydrate Mimetics as Potential Antiinfective Treatments for Staphylococcus aureus*  
 Antibiotic resistance strains of *Staphylococcus aureus* are an important cause of nosocomial infections. These strains are currently causing community-acquired infections, resulting in an increased need for alternative therapies. *S. aureus* capsules appear to act as important virulence determinants, as bacteria with type 5 and 8 capsules cause 75-90% of nosocomial infections and anti-capsular antibodies decrease mortality in infected mice. Our research involves construction of analogs of the aminosugars found in *S. aureus* capsules that we are testing for their ability to prevent capsule synthesis. To measure capsule production, bacteria were incubated with MV-II-065 or MV-II-063 (both n-glucosyl 1,2,3-triazoles with different functional groups), formalinized, trypsinized, and the bacteria used as an antigen in an ELISA. The presence of capsular carbohydrate was determined by incubation with anti-capsular monoclonal antibodies, followed by a secondary incubation with peroxidase-conjugate anti-mouse Ig and a colorimetric substrate. Incubation type 5 *S. Aureus* with MV-II-065 decreased antibody binding, but the compound had no effect on Type 8 capsule synthesis. Studies with MV-II-063 have indicated inhibition of capsule synthesis in Type 8 bacteria, while type 5 capsule synthesis remains to be tested. In addition to their possible therapeutic potential, the differential effects of these two compounds may be used to investigate the synthetic pathways for these capsules.

- Faith, Lindsey** Food & Nutrition Ohio Rm. 3:30 - 5:00  
*Current Food Trends and Eating Habits in the Mahoning Valley*  
 Fast, convenient, healthy; more meals at home using convenience items; and new exotic flavors are some of the food trends predicted for Americans over the next decade by food marketing experts (AGMRC, 2008). Consumer preferences drive the food industry and the marketing of trend-current products can equally shape consumer purchasing behaviors (USDA, 2008). Mahoning Valley residents (n = 100) were surveyed to ascertain their awareness of and participation in current and past food trends, and sources of information that influence food behaviors. As a significant source of food and nutrition information, more female participants (71%) than males (50%) selected print media, while more males (57%) than females (48%) selected the internet. More females (43.2%) than males (35.7%) reported currently being on some form of modified diet. Low carbohydrate (34%), low fat (27%) and low calorie (11%) were the forms of diets most often reported by women, while high protein (29%, low carbohydrate (28%), low fat (21%) were those reported most often by males. Our results suggest that males and females have different influences on food behaviors and when education is aimed at them, may be better reached by different sources of information.
- Feldmeier, John** Sigma Xi Ohio Rm. 1:30 - 3:00  
*Measuring the Production Rate of Planetary Nebulae in Spiral Galaxies*  
 Planetary nebulae (PNe) are a common end-phase of stellar evolution, but the number of bright planetaries produced from a stellar population is of great interest, and is of yet uncertain. Observations of luminous extragalactic planetary nebulae in elliptical galaxies have shown that the production rate can vary by almost an order of magnitude. However, due to the effects of internal extinction and confusion with H II regions, it has been difficult to measure the production rate in spiral galaxies, until now. We present results from a narrow-band imaging survey of six face-on spirals (M74, M83, M94, IC 342, NGC 6946, & NGC 5068), with between 20 and 250 PNe detected in each galaxy and with most of these objects spectroscopically confirmed. Combined with broad-band surface photometry, and careful studies of completeness, this allows us to estimate the PN production rate in the disks of these objects and to place limits on the disk opacities due to dust. We present our results and explore how this rate varies with radial distance, metallicity and age.
- Fleeger, Melissa** Biology Ohio Rm. 8:30 - 10:00  
*Chloroplast DNA Differences May Lead to Dutch Elm Disease Resistance*  
 Dutch Elm Disease is a fungal infection spread by elm bark beetles that has devastated populations of *Ulmus americana* (U. Americana), commonly known as American Elm trees, around the world. Different groups of trees seem to be affected by the disease differently. The local region of the United States has U. americana growing in both old growth forests and cultivated areas. The elms in the old growth forest seem to be unaffected while the elms that have been cultivated die off. One possible reason for the difference in these groups of trees is a genetic resistance to the fungus. Genetic lineage can be looked at through the maternally inherited chloroplast DNA (cpDNA). Differences in the sequence of the cpDNA indicate evolutionary branching which may lead to benefits like resistance to disease. Chloroplast DNA will be extracted from old growth samples and cultivated samples. Old growth trees are found in the conserved region in Gowanda, New York known as Zoar Valley. The sample leaves are taken from cultivated trees in Mill Creek Park located in Youngstown, Ohio. Sequences of the cpDNA will be amplified using the polymerase chain reaction (PCR) with specific oligonucleotide primers that are commonly found in plants. The regions of the cpDNA can then be compared using a sequencing machine. This project can also be expanded to look at differences in other elm species that would explain resistance to the disease very similar to the resistance found in old growth forests.
- Foutz, Anthony** Electrical Engineering James Gallery 8:45 - 9:00  
*Design of a High Voltage Audio System using a Tesla Coil and Plasma Tweeter*  
 The purpose of this project is to design a high voltage audio system which will incorporate a Plasma Sonic Tesla Coil and Plasma Tweeter. The project will serve as an electrical demonstration for potential electrical engineering students, alumni, and administration. The project encompasses the understanding of the group as learned in the undergraduate electrical engineering program and will abide by the Institute of Electrical and Electronics' Engineers code of ethics. The result will be a distinguished project for professional demonstration to be exhibited by the university.
- Fox, Mike** Mechanical Engineering James Gallery 11:15 - 11:30  
*Heavy Capacity Lathe for Three Axis Milling Machine Upgrade*  
 Manufacturers of metalworking, strip processing, and extrusion equipment have a need for the capability to perform cylindrical and eccentric turning in-house due to increasing lead times for outside manufacturing and increasing product sizes, especially in the extrusion industry. To meet these needs, a three-axis milling machine was upgraded to a four-axis turning center by adding motor-driven spindle supports for work piece rotation. The spindle supports, much like the headstock and tailstock on a common lathe, were designed to hold and turn cylindrical work pieces of up to 163,201 kg (74,012 lbm) with speeds no higher than 50 rpm. Other requirements included a large electrically driven motor, an emergency braking system, gear reduction, precise positioning feedback, mounting equipment on both supports, and independent adjustment capabilities on the tailstock. The end product was an oversized lathe. Calculations were performed in all critically stressed areas of these supports to design sufficient frames and shaft housings. To meet the requirements for such a machine meant that the bearings needed to be capable of taking these high loads while maintaining accuracy in the machining process. To overcome the forces induced by the cutting tool as well as from the work piece inertia, the motor would need to be high in power so that in conjunction with gear reduction, large torques could be produced.

- Franklin, Cheryl** Chemical Engineering Ohio Rm. 10:30 - 12:00  
*Separation of Oil and Water Emulsion of Effluent Lubrication Streams from a Copper Mill*  
 In the Copper Mill Industry of rolling and forming copper, lubricants are needed to assist the machinery in order to form copper. Thus, a very chemically stable emulsified lubricant is needed. After the copper has been formed, the lubricant is desired to be purified. This necessitates breaking of the emulsion to recover water and oil separately. This presentation of a full-scale and bench-scale chemical engineering solution solves the problem of separating the emulsified lubricant to obtain the most amount of water possible from the separation process.
- Fulton, Benjamin** Biology Ohio Rm. 8:30 - 10:00  
*2D-PAGE Comparison of Myocardial Collagen in Male and Female SHR*  
 Each year, nearly 250,000 women die of coronary heart disease, the leading cause of death for women in America. A major contributing factor to coronary heart disease is the onset of hypertension; a blood pressure of 140/90 mmHg or greater, 90-95% cases of which have no directly identifiable cause. Six percent of the world's deaths are attributed to the effects of hypertension, including damage to the brain, blood vessels, heart and kidneys. Most of these effects, however, occur before the symptoms of hypertension arise, including arterial lesions of the brain, heart and kidneys, hyperinsulinemia, dyslipidemia, and elevated hematocrit levels. Much valuable research has been conducted in the past on hypertension, but with a deficiency in the area of gender studies with most research being performed on male subjects. The present study simultaneously compares the effects of hypertension on both male, female, and ovariectomized female subjects, using the Spontaneously Hypertensive Rat (SHR) as a model. Collagen, which is the main focus of this study and the major ultrastructural protein in the heart, is quantitated using 2D-PAGE to analyze the differences in collagen density in male and female SHR hearts. It is our hypothesis that given the difference between male and female physiology, specifically the presence or absence of estrogen, that hypertensive effects will manifest differently between the sexes, in terms of collagen deposition and density in cardiac architecture.
- Gallagher, Amber** Marketing Management Pugsley Rm. 2:45 - 3:00  
*The Impacts of a Study Abroad Program*  
 Study abroad programs are a wonderful opportunity for students of all majors. Most people think that study abroad programs are too expensive. Some feel that they are not worth it. On the other hand, in my opinion, study abroad programs are worth it. They can change one's life. Not only can they make a student more competitive for a career in the future but they can have an everlasting impact on how one sees this world. This presentation will show how beneficial a study abroad program can be. I will use myself as an example of how a study abroad can impact one's life by showing what I learned while I was on the London, England and Dublin, Ireland study abroad tour.
- Gallatin, Tracy** English Humphrey Rm. 2:30 - 2:45  
*Yo Bitch: An Empirical Study of Contemporary Usage*  
 Our research will explore the semantic expansion of the word "bitch" using a scenario questionnaire. We will survey college freshman ages 18-23 and examine what role gender plays in this semantic expansion.
- Galloway, Meaghan** Anthropology Ohio Rm. 10:30 - 12:00  
*A Community Assessment Of Gerontology Educational Needs And Employment Outlook*  
 The growth of the of the older population has created challenges and opportunities for Youngstown State University graduates to provide goods and services to older adults in a myriad of settings. Youngstown State University is in the process of building an interdisciplinary undergraduate gerontology major. As a part of the University's goal of community partnership in the development of a Bachelor's degree in gerontology, a community needs assessment was conducted. The Gerontology Community Advisory Committee, the Gerontology Steering Committee, and other key members of the Mahoning Valley Gerontological community were involved in focus groups, informal discussions, and survey research.
- Galloway, Meaghan** Anthropology Ohio Rm. 10:30 - 12:00  
*Status, Workshops, and Ritual Goods: Excavations at the Ancient Maya City of Cancuen, Guatemala*  
 Excavations in 2007 at the ancient Maya city of Cancuen in Guatemala revealed a high status residence and workshop complex north of the site's spectacular palace. Cancuen is located at a strategic position in a bend of the great Pasión River where the jungles of the Petén begin to ascend into the volcanic mountains to the south. From this position the kings of Cancuen were able to control the flow of exotic highland goods to the kingdoms to the north while gaining wealth and prestige for themselves. Archaeological research at Cancuen has revealed the largest palace yet discovered at any Maya site, surrounded by a series of workshops that crafted raw highland materials into finished elite goods. Included among these are workshops for obsidian and pyrite and the largest jade workshop ever discovered in the New World. The focus of research in the summer of 2007 was a newly discovered high status complex on the north side of Cancuen. Excavations revealed three burials and grave goods associated with two of these suggest that the complex may have been an obsidian workshop. Ceramics from a midden (trash pit) date occupation to the 8th century AD and clearly indicate the elite status of the residents of this complex. Our poster presents our excavations and places our findings into the broader context of Cancuen and the Late Classic period (AD 600-900) of the Maya world.
- Garthwaite, David** Electrical Engineering Ohio Rm. 10:30 - 12:00  
*Inductive Speaker System*  
 Amplifiers are used for many applications of everyday life from small stereos to major production halls, stadiums, and movie theaters around the world. The problem that comes along with this is all the wires that need run to the speakers and the amplifier from the power source. We plan to develop an amplifier connected with a magnetic coil to make a speaker system that can easily be removed when not in use by transferring power through the magnetic coils. Car audio systems are a big business with teenagers as well as adults. The problem with this is that many teenagers share a car with their parents. Our design will make this no longer an issue in any car. The teenager can now have a loud audio system in the car, but then when mom or dad goes to drive it they can just lift the speakers out and it's like nothing was ever there. With most adults this can also be a problem when trying to haul or transport a larger object in the trunk. This way the speaker system can easily be removed with little hassle and no wires to disconnect or have to deal with, just lift the box out and be on your way.

- Genuske, Megan** Mechanical Engineering James Gallery 1:30 - 1:45  
*Anti-Penetration Equipment Designed For the Obstruction of Vehicles*  
 In this age of worldwide security being a top priority among clients, it is important to protect people both and the places in which they work. One of the most vulnerable points in many of the secure locations is the access driveway. It was requested that a road barrier be designed utilizing several criteria: 1) be able to withstand a collision force with a 6800 kg (15000 lb) vehicle at 50 kph (30 mph) and render said vehicle inoperable; 2) have the ability to be quickly removed to allow for authorized admittance; 3) be a self contained, non-removable, subterranean structure; and 4) provide a reliable barrier. The barrier designed consisted of cylindrical shafts. Each shaft was made out of common steel pipe and was filled with structural grade concrete. The shafts were made retractable by the use of a 1750 rpm Dodge motor. The structural challenges involved were the creation of a continually reliable structure which had the structural integrity to withstand the specified forces, and the ability to have the barrier retract at a relatively fast rate. Ultimately, the design was confirmed through manual, computer and engineering analyses. The stresses were found and rendered safe compared to the provided guidelines and design factors.
- George, Johanna** Art Jones Rm. 2:15 - 2:30  
*Preserving the Essence: Visually Investigating Life, Death, and the Afterlife*  
 I will be presenting a series of recent works that explore the relationship between the spirit and body. As an artist, I share in the need to make evidence of a belief. I question what it is to know or believe something. Is it enough to have only the idea? For me, there is a palpable desire to create the proof of something, to make visible the invisible, to make the uncertainties certain. Like the ancestors of ancient cultures, I need a sign, a symbol, and a connection to the intangible. Relating my work to centuries of humans striving to connect to the invisible, the ethereal, I feel connected to their spirits. I believe this connectedness is vital. I look for ways to unite myself with my work and my work with the viewer. Performance-based installation lends itself to this concept because it explores the whereabouts of the spirit. During the performance, I am called out of myself to be present for the viewer, but at the same time, I experience an internal catharsis, bringing me to a new level of awareness within my own body. It is me doing something, being aware that I'm doing it, but in a completely subconscious, deeper place. It is my spirit, inhabiting the space between the inside and outside of the body, being with the viewer, and being within the artist.
- George, Colleen** Art Ohio Rm. 10:30 - 12:00  
*Quantitative Evaluation of Face Sketch*  
 Quantitative Evaluation of Face Sketch Abstract "Quantitative Evaluation of Face Sketch Using an Image Based Recognition Method" is an ongoing, cross-disciplined, research project between the Department of Computer Science and Information Systems and the Department of Art. The goal of the project is to study the effectiveness of face sketches for the purpose of suspect identification, by using a widely accepted rating system in pattern recognition and biometrics. Assistant Professor Dr. Yong Zhang and Assistant Professor Christine McCullough head this project. As a new member working on this project, I will be participating in the next phase of the study: creating facial sketches from a simulated eyewitness account. Each member will study a photo that will be used as the basis for the eyewitness account as an attempt to create an accurate depiction for each sketch artist. Collaborating with the other members of our team, we will use these descriptions of suspects to construct images that can be used for facial recognition.
- Gilida, Kristin** Chemical Engineering Bresnahan I Rm. 2:00 - 2:15  
*Separation of Water from Chemically Emulsified Oil*  
 Chemically emulsified oil and water, while making some parts of industrial processes easier, can become a hazardous waste problem. By finding a reasonable separation process, a company will save money both from waste disposal and from being capable of reusing resources. Various salts and salt combinations were used to demulsify the oil and water by changing ionic strengths. It was found that a combination of aluminum chloride (a small amount) and sodium chloride (near saturation) will separate the emulsion. A bench scale process was formed for complete separation and to purify water down to 20ppm oil. A scale-up model is proposed which would help industry with the waste disposal problem.
- Goyal, Rashee** Biology Ohio Rm. 8:30 - 10:00  
*Carbohydrate Mimetic (MV-II-063) Testing for Inhibition of S. aureus Capsule*  
 Staphylococcus aureus is a bacteria that is one of the leading causes of serious hospital-acquired infections and is becoming a concern for community-acquired infections. The bacteria are becoming an extremely dangerous pathogen because of its ability to cause serious diseases and its developing resistance to antibiotics. It is crucial to find a treatment against the staph infection, especially for immuno-compromised patients. Immuno-therapies are being developed through carbohydrate mimetics. Carbohydrate mimetics are molecules that are similar to the carbohydrates that are normally found in the capsule. They are being tested through ELISA analysis for the ability to inhibit the formation of capsule in S. aureus. We hope to find a mimetic that will stop capsule formation to possibly find new treatments against S. aureus infections.
- Guerrieri, Danielle** Mechanical Engineering James Gallery 4:45 - 5:00  
*The Great Moonbuggy Competition: Reverse Pedaling and Frame Aspects*  
 This presentation covers the reverse pedaling and frame aspects of the redesign. Every year a group of engineering students designs a moonbuggy in order to prepare it for The Great Moonbuggy Competition in Huntsville, Alabama. The competition was created to provide students an opportunity to gain a hands-on engineering experience, in which the team will encounter problems similar to ones the original moonbuggy team from the Apollo Missions encountered. In order to replicate the original moonbuggy mission, the race consists of an environment that resembles a lunar terrain. Different obstacles such as craters, rocks, inclines, lava ridges, and lunar soil throughout the course will test the design and durability of the buggy. This year the moonbuggy was designed to improve on last year's design and place higher in competition. After careful analysis of the moon buggy, the needed improvements were: 1) to reverse the rear pedaling system, 2) to improve the design of the hub box, and 3) to add hydraulic brakes. Research was then completed in order to maximize the effects of these changes. In order to reverse the pedaling system, it was decided that new sprockets and chains were needed. The current ones were either bent or improperly positioned. Three derailleur/tensioners were added to enable the reverse pedaling to occur at the rear of the vehicle.

- Habeger, Elaine** Master of Arts in English Humphrey Rm. 11:00 - 11:15  
*Reading "Reading St. Aethelthryth as a Woman" as a Feminist*  
 The paper presented is an examination of feminist and not-so-feminist interpretations of women in Old English literature, particularly women with royal and religious positions. This researched examination focuses on and contextualizes a modern scholar's feminist critique of the depiction of St. Aethelthryth (now known as St. Audrey) by Anglo-Saxon hagiographer Aelfric.
- Hadzigeorge, Sevasti** Nursing Bresnahan II Rm. 12:00 - 12:15  
*Promoting Preceptorship*  
 Preceptorship for a future nurse is usually seen during his or her senior year of college. The senior nursing student has a nurse preceptor assigned in order to observe and perform the duties of a registered nurse that will be expected upon graduation. This concept could also be applied to the oncoming nursing student. If senior nursing students were assigned as a preceptor to oncoming nursing students, a sense of comfort may be obtained throughout the program. Not only would the oncoming students be able to interact with students who have been in their same situations, but it would also provide a means of education for the senior nursing students by being able to refresh and teach the skills that were learned throughout the nursing program. Although the nursing program at Youngstown State University has a mentorship program, the two concepts are completely different. The benefits of being and having a preceptor will be mentioned in this literature review as well as the differences between "mentorship" and "preceptorship." Youngstown State University's current and future nursing students could benefit greatly by incorporating a "Student Nurse Preceptor" program into its curriculum.
- Hakeem, Shaiyla** Communication Studies Coffelt Rm. 2:45 - 3:00  
*Rhetorical Analysis*  
 Shirley Chisholm's speech Equal Rights for Women deals with equality for women and the underlying existence of hidden discrimination. This speech was delivered in 1969, during an era where women were deemed to be inferior to men. My research includes an analysis of Chisholm's speech by means of Kenneth Burke's Dramatistic Pentad. The Pentad consists of five main elements in which this speech was analyzed and deciphered. According to the results of the Pentad analysis, the meaning of a speech can slightly change depending on the frame of mind of the listener.
- Hall, James** Electrical Engineering James Gallery 9:00 - 9:15  
*Discrete Lighting Control using Integrated Circuit Architectures*  
 This research/design project deals with digitally-controlled, high-current drivers for light emitting diode (LED) arrays. Traditional lighting systems which employ the use of tungsten and halogen filaments to produce light are inefficient, costly to maintain, and provide the user with very little control over color temperature. New advancements in LED technologies have made them a viable solution for use in commercial and residential lighting systems. Forward phase control of the LEDs' power source will allow the light output to be varied. In addition, a digital controller will allow for individual LED arrays, of different color temperatures, to be dimmed both independently or in unison. The digital controller will also provide compensation for the logarithmic output characteristics of the LED arrays, ensuring that the perceived light output during dimming is linear. Readily available high output LEDs ranging from 1 to 5 watts are, on average, able to achieve a light output efficiency of 50 lumens/watt with an average life expectancy of 100,000 hours. In comparison, incandescent and halogen lamps achieve light efficiencies of 10 and 25 lumens/watt with an average life of 3000 and 5000 hours respectively. Great innovations in LED technologies have affirmed the use of LED lighting to satisfy the illumination needs of the future.
- Hallett, Christopher** Mechanical Engineering James Gallery 1:45 - 2:00  
*Design And Evaluation of "El Matador" Anti-Ram Barrier*  
 In recent years, new threats have compromised the security of various facilities in the United States. One option to enhance security is the addition of an anti-ram vehicle barrier, which has applications of safety and security for pedestrian walkways, traffic control, etc. In the situation of using these barriers to control traffic, there are a few different design options. The most widely used design for security stops and gateways is the typical security hub with a wooden/plastic rotating arm. Although very effective for controlling the flow of traffic, this design is not very security and safety efficient. An alternative design for these traffic control barriers is the retractable bollard. These reinforced posts would not only manage traffic flow, but under design and certification requirements, they must be able to stop a 6,800 kg (15,000-lbm) vehicle traveling at 48 km/h (30 mph) within 1 m (3 ft). This would ensure the safety all people and property on the other side of the barrier. The presentation outlines and discusses the design of this retractable bollard system. Design requirements based on component regulations and limitations are further specified, as well as methods of evaluation, including: safety, maintainability, performance, installation, cost, service life, environmental conditions, and appearance. The final design of "El Matador" and its potential problem areas are also concluded and summarized.
- Hampton, Timothy** Music Bresnahan I Rm. 11:00 - 11:15  
*The Birth of the Romantic Lied: A Look at Franz Schubert's Gretchen am Spinnrade*  
 Franz Schubert's "Gretchen am Spinnrade" represents a turning point in music history and for the German lied. Previously unheard of as a vehicle for "serious" music, the lied inspired the creativity of several of the greatest composers of the nineteenth century. In making the great leap onto the concert stage, the lied underwent a transformation of content and style. The architect of this transformation, and one of the most prolific writers of romantic lieder, is Schubert. Many of the most integral and long lasting traits of the romantic lied can be seen in his first great masterpiece of the genre, "Gretchen am Spinnrade." These traits include the total integration of music and text, and the piano accompaniment as a vehicle of meaning.

- Hamrick, Phillip** English Humphrey Rm. 1:30 - 1:45  
*An Empirical Investigation of Gender Variation in Perceptions of Gratitude*  
 Recent research indicates that significant variation exists between males and females in both perception and conceptualization of expressions of gratitude. A theoretical approach to gender differences in gratitude is offered in Katz et al. (2007), who argue that variables in gratitude such as semantic intensity are based on gender. Similarly, Wood et al. (2008) research gratitude along several lines, concluding that gender offers significantly different conceptualizations of gratitude. In our presentation, we examine appropriateness of a few of those types of gratitude. We operate on Wood et al.'s (2008) assumptions and are interested specifically in appropriateness of the conceptualizations shared by both genders. This empirical research is not meant to be exhaustive. The handouts used to test our hypothesis are designed only to account for male/female, male/male, and female/female relationship variation. Finally, we will analyze the data and determine the validity of the assertions put forth by Katz et al. (2007) and Wood et al. (2008), but also to establish a base-line series of conclusions on gender and gratitude under specific conditions, which can be extrapolated for further research. References: Katz, et al. (2007) 'On acknowledging thanks for performing a favor.' *Metaphor and Symbol*, 22(3), 233-250. Wood, et al. (2008) 'Conceptualizing gratitude and appreciation as a unitary personality trait.' *Personality and Individual Differences* 44, 619-630.
- Hauschak, Jennifer** History Pugsley Rm. 10:30 - 10:45  
*Alexander Nevskii: Hero or Traitor?*  
 This paper argues that Alexander Nevskii (1220-1263), Grand Prince of Novgorod and Vladimir, encouraged the growth of the Russian state by protecting it from outside influences. He fought significant battles against Sweden, Germany and the Teutonic Knights, and prevented Mongol attacks by paying them tribute. Therefore, we can see why he is considered both a hero and a traitor. An image of a heroic Nevskii was created by Stalin's propaganda machine, leaving out evidence to the contrary. This paper discusses Stalin's treatment of Nevskii, including the fact that Nevskii's history is sketchy and biased at best, and thus, Stalin was free to create the character he wanted. Stalin's use of the heroic Nevskii, for his own publicity, will be discussed.
- Hartman, Lee** Industrial & Systems Engineering Ohio Rm. 10:30 - 12:00  
*Applied Methods at Brainard Rivet Company*  
 A Time study and methods engineering applications were applied at Brainard Rivet Company, which is an employee owned manufacturer of cold headed fasteners. The study was performed with each element that is concerned with all aspects of preparation, packaging, and completion in the packaging/shipping department. Data was collected from the following processes: 1. Making the boxes, 2. Sliding them through the machine to be packed, 3. Picking up the boxes off the line, and placing them on the pallet, 4. Operation of the fork lift and placing in warehouse to be shipped. The studies will involve different applications in the field of industrial/methods engineering, which include video time study with Video Timer Pro software, MTM1, MTM2, and MOST. The process will be compared with each application to develop a standard time which included allowances of the observed process and to take considerations for improvement within the process.
- Haug, Will** Chemical Engineering Ohio Rm. 10:30 - 12:00  
*Separation of Oil and Water Emulsion of Effluent Lubrication Streams from a Copper Mill*  
 In the Copper Mill Industry of rolling and forming copper, lubricants are needed to assist the machinery in order to form copper. Thus, a very chemically stable emulsified lubricant is needed. After the copper has been formed, the lubricant is desired to be purified. This necessitates breaking of the emulsion to recover water and oil separately. This presentation of a full-scale and bench-scale chemical engineering solution solves the problem of separating the emulsified lubricant to obtain the most amount of water possible from the separation process.
- Henderson, Rachel** Nursing Ohio Rm. 3:30 - 5:00  
*Transcultural Nursing Experience in Maiz, Mexico*  
 This poster depicts the experiences of a health care team caring for individuals in Maiz, a poor town in east central Mexico. The team consisted of four (4) nursing students and four (4) faculty from a university in the Midwest, three (3) physicians, a pharmacist, a minister, and other support staff. A primary care clinic was held in a one room church for children, pregnant women and adults, many who had multiple, chronic health problems. It was the first time students worked with non-English speaking clients with these basic and diverse health care needs. During this two day clinic, the nursing students triaged over 280 indigent patients and were able to perfect their assessment skills as they followed individual patients from intake, triage, physician's visit, pharmacy, and discharge teaching. This experience provided an opportunity for students to develop their leadership skills by becoming patient advocates and active learners in a diverse setting. They also discovered creative forms of communications and nursing interventions. Cultural competence as defined by Smith (1998), is a continuous process of cultural awareness, knowledge, skill, interaction, and sensitivity among caregivers and the services they provide. Through this experience, the nursing students began to acquire cultural competence as they provided care. The Mexican patients benefited from free medication, infant formula, donated eye glasses and personal hygiene products.
- Holmes, Andrew** Biology Ohio Rm. 8:30 - 10:00  
*Characterization of a Multimetal Resistant Strain of Enterobacter cloacae*  
*Stenotrophomonas maltophilia* ORO2 (*S. maltophilia* O2) was isolated from a mercury contaminated site in Oak Ridge, TN and demonstrated the ability to grow in the presence of toxic levels of mercury, gold, cadmium, lead, chromium, silver and selenite salts. Recent work in identifying other metal resistant bacteria from the metal contaminated site led us to sequence a portion of the 16S rRNA from *S. maltophilia* O2. Basic Local Alignment Search Tool (BLAST) analysis suggested that we were working with a strain of *Enterobacter*. We obtained a strain of *S. maltophilia* O2 from the American Type Culture Collection (ATCC) and sequenced the 16S rRNA from both strains. BLAST analysis of both sequences identified the ATCC strain as *S. maltophilia* and our strain as *Enterobacter*. Further biochemical tests using the Enterotube II identification system showed our strain as *Enterobacter cloacae* (*E. cloacae*). We further characterized this *E. cloacae* strain by comparing its minimum inhibitory concentration (MIC) to several metals salts with the MICs of *S. maltophilia* O2. Preliminary data showed that the MICs for *E. cloacae* were 50 µM Hg(II), over 50 µM Au(III), over 2mM Cu(II), 35 µM Zn(II), over 300 µM Cd(II), over 300 µM for Cr(VI) and 2mM Se(IV). The MICs for *S. maltophilia* O2 were 220 µM Hg(II), over 50 µM Au(III), over 2mM Cu(II), 7mM Zn(II), over 300 µM Cd(II), over 300 µM for Cr(VI) and 2mM Se(IV). This work will provide the foundation for proteomics research on selenite resistance for *E. cloacae* strain and transposon mutagenesis.

- Hoperich, Todd** Mechanical Engineering James Gallery 11:30 - 11:45  
*Mandrel Stress Relief Furnace*  
 As with any machining process, the stress relieving stage is of significant importance. After machining a metal below design specifications, it is welded to remove residual stresses and re-machined within tolerance. Although there is a worldwide demand for machining of many industrial components, there is one machine shop with the ability to machine pipe mandrels. These mandrels range in size from ( 6-12 in ) in diameter and (30-50 ft) in length. Because of the extensive amount of material, the stress relief across an entire mandrel rod can be tedious. The present stress relief furnace was originally constructed with little thought put into the design. However, it accomplishes the task of heating the mandrel rods to the correct temperature. Because the furnace is the first of its kind, problems ensued with continuous use: uneven temperature distribution, heat loss through seams and openings, warping of the furnace shell, a hot exterior surface, failure of bearings, and difficulty in use. Investigation of the heat analysis was done using various heat transfer methods and finite element analysis was conducted to design certain components of the motor-jack system.
- Howell, Clarence** Industrial & Systems Engineering Ohio Rm. 10:30 - 12:00  
*Applied Methods at Brainard Rivet Company*  
 A Time study and methods engineering applications were applied at Brainard Rivet Company, which is an employee owned manufacturer of cold headed fasteners. The study was performed with each element that is concerned with all aspects of preparation, packaging, and completion in the packaging/shipping department. Data was collected from the following processes: 1. Making the boxes, 2. Sliding them through the machine to be packed, 3. Picking up the boxes off the line, and placing them on the pallet, 4. Operation of the fork lift and placing in warehouse to be shipped. The studies will involve different applications in the field of industrial/methods engineering, which include video time study with Video Timer Pro software, MTM1, MTM2, and MOST. The process will be compared with each application to develop a standard time which included allowances of the observed process and to take considerations for improvement within the process.
- Hubbard, Evan** Civil & Construction Engineering Bresnahan I Rm. 1:45 - 2:00  
*Greening the Construction Curriculum*  
 In the construction world there is a great need for environmentally friendly construction, yet less than 2% of all construction can be classified as "green". In the past decade many tools have come about to help keep the splendor of our surroundings alive, a major one of them being the Leadership in Energy and Environmental Design or LEED. LEED is a system that rates a structure on how environmentally safe it is for the entire life of the building, from construction to demolition. The transition from a student in the CCET program to a recent graduate and practicing engineering technologist is difficult enough, but it's not even half as tough as being introduced to new ideas and concepts in the job field with no previous experience. The Civil & Construction Engineering Technology (CCET) program is currently undertaking a review of their curriculum to address the issues of sustainable or "green" design. This paper presents the work in progress on the literature review and preliminary proposed revisions to the CCET curriculum. Many other prominent universities have either integrated sustainable design into their already existing courses whereas others have created an entirely new program that focuses exclusively on sustainable design. Based on the preliminary research, the best course of action for the CCET is to infuse sustainable design concepts into some of the key courses, as well as to create a technical elective to focus solely on LEED.
- Huston, Matthew** Electrical Engineering Ohio Rm. 10:30 - 12:00  
*Inductive Speaker System*  
 Amplifiers are used for many applications of everyday life from small stereos to major production halls, stadiums, and movie theaters around the world. The problem that comes along with this is all the wires that need run to the speakers and the amplifier from the power source. We plan to develop an amplifier connected with a magnetic coil to make a speaker system that can easily be removed when not in use by transferring power through the magnetic coils. Car audio systems are a big business with teenagers as well as adults. The problem with this is that many teenagers share a car with their parents. Our design will make this no longer an issue in any car. The teenager can now have a loud audio system in the car, but then when mom or dad goes to drive it they can just lift the speakers out and it's like nothing was ever there. With most adults this can also be a problem when trying to haul or transport a larger object in the trunk. This way the speaker system can easily be removed with little hassle and no wires to disconnect or have to deal with, just lift the box out and be on your way.
- Hyler, Adam** Electrical Engineering James Gallery 9:00 - 9:15  
*Discrete Lighting Control using Integrated Circuit Architectures*  
 This research/design project deals with digitally-controlled, high-current drivers for light emitting diode (LED) arrays. Traditional lighting systems which employ the use of tungsten and halogen filaments to produce light are inefficient, costly to maintain, and provide the user with very little control over color temperature. New advancements in LED technologies have made them a viable solution for use in commercial and residential lighting systems. Forward phase control of the LEDs' power source will allow the light output to be varied. In addition, a digital controller will allow for individual LED arrays, of different color temperatures, to be dimmed both independently or in unison. The digital controller will also provide compensation for the logarithmic output characteristics of the LED arrays, ensuring that the perceived light output during dimming is linear. Readily available high output LEDs ranging from 1 to 5 watts are, on average, able to achieve a light output efficiency of 50 lumens/watt with an average life expectancy of 100,000 hours. In comparison, incandescent and halogen lamps achieve light efficiencies of 10 and 25 lumens/watt with an average life of 3000 and 5000 hours respectively. Great innovations in LED technologies have affirmed the use of LED lighting to satisfy the illumination needs of the future.

- Johnson, David** Chemical Engineering Bresnahan I Rm. 2:00 - 2:15  
*Separation of Water from Chemically Emulsified Oil*  
 Chemically emulsified oil and water, while making some parts of industrial processes easier, can become a hazardous waste problem. By finding a reasonable separation process, a company will save money both from waste disposal and from being capable of reusing resources. Various salts and salt combinations were used to demulsify the oil and water by changing ionic strengths. It was found that a combination of aluminum chloride (a small amount) and sodium chloride (near saturation) will separate the emulsion. A bench scale process was formed for complete separation and to purify water down to 20ppm oil. A scale-up model is proposed which would help industry with the waste disposal problem.
- Jones, Jason** Mechanical Engineering James Gallery 4:30 - 4:45  
*The Great Moonbuggy Competition: Hub Design and the Hydraulic Braking System*  
 This presentation covers the hub design and the hydraulic braking system. In order to replicate the original moonbuggy mission, the race consists of an environment that resembles a lunar terrain. Different obstacles such as craters, rocks, inclines, lava ridges, and lunar soil throughout the course will test the design and durability of the buggy. This year the moonbuggy was designed to improve on last year's design and place higher in competition. After careful analysis of the moon buggy, the needed improvements were: 1) to reverse the rear pedaling system, 2) to improve the design of the hub box, and 3) to add hydraulic brakes. Research was then completed in order to maximize the effects of these changes. In order to reverse the pedaling system, it was decided that new sprockets and chains were needed. The current ones were either bent or improperly positioned. Three derailleur/tensioners were added to enable the reverse pedaling to occur at the rear of the vehicle. The goal of the improvements made to the hub box was to simplify the design. Last year's design was poorly fabricated and caused failure in the bearings. The new design will allow for easy accessibility and assembly. Hydraulic brakes will be used on the new design due to malfunction of the mechanical brakes used last year. The issue with mechanical brakes involved dust and debris that was trapped in the brake line. This will be eliminated in the new design.
- Juby, Joe** Industrial & Systems Engineering Ohio Rm. 10:30 - 12:00  
*Production Analysis of Trimming and Inspecting Operation at Fireline, Inc.*  
 At the local manufacturer of Fireline in Youngstown, Ohio, Youngstown State University Industrial Engineering students in the methods engineering class performed a field study. The specific process studied was the trimming of the edges of the ceramic vessels. This study forced extra learning about production analysis in the classroom while obtaining valuable experience in the field. Time study analysis was the major technique applied to this environment. Other techniques used include flow diagramming, line balancing, and the analysis of predetermined time systems consisting of MOST, MTM1, and MTM2. In this study, there was also a chance to use data collection, and work sampling techniques, which were learned in other courses.
- Kassis, Hanna** Accounting Pugsley Rm. 2:00 - 2:15  
*Financial Literacy Among College Students*  
 The average college student incurs student loans to pay for education and will graduate with a debt burden of nearly \$20,000 per the 2003-2004 National Postsecondary Student Aid Study. This is one of the many reasons why the Kappa Xi Chapter of Beta Alpha Psi is committed to helping college students become financially literate. In the past, Kappa Xi found it difficult to manage a financial literacy program, but have since seen it grow exponentially. The past difficulties faced were not the result of poor effort, but perhaps a lack of support. This year, Kappa Xi has worked with faculty members to promote the program. Training sessions were held before the team began giving presentations on topics such as credit use and savings. Audiences included business and honors students. In addition, Kappa Xi presented to members of the community. Not only were audience members taught to manage their money and improve their well-being, but the program also led the presenters to learn about themselves. Kappa Xi hopes to expand the financial literacy program even further. Besides targeting more college students, presentations will be given to other groups in the community. In addition, Kappa Xi plans to collaborate with the Volunteer Income Tax Assistance (VITA) program to educate clients on how to make the most of their tax refunds.
- Katzman, Brooke** Chemistry Ohio Rm. 1:30 - 3:00  
*In Situ Alkyl and Acyl Azide Synthesis Using p-ABSA/DBU*  
 The commercially available sulfonyl azide p-acetamidobenzensulfonyl azide (p-ABSA) reacts with the organic base 1,8-diazabicycloundec-7-ene (DBU) to produce an organic soluble salt that serves as a safe source of azide anion. We are developing safe routes to important organic azides, such as alkyl and acyl azides, by using this salt in reactions with simple substrates such as alkyl and acyl halides. The chemistry developed thus far, the use of microwave heating to speed up reactions, as well as the use of Infra-red spectroscopy to follow the course of reactions will be presented.
- Kaur, Jasmeet** Biology Ohio Rm. 8:30 - 10:00  
*LaeA as a Competent Virulence Factor in Aspergillus fumigatus*  
 The basic biology of the species *Aspergillus fumigatus* is poorly understood, however the recent sequencing of the genome (Af293) has provided new insights into the species pathogenicity in human hosts, in addition to understanding these species similarities to other fungal pathogens and more effective treatments. The prevalence of this pathogen and its ability to survive in immunocompromised hosts and morphological changes it exhibits to survive can now be better understood. Virulence factors associated with the LaeA gene as a virulence factor and other relevant secondary metabolites will be considered in this paper. The goal is to provide better insight into possible treatment targets and immunoprocesses that eradicate the pathogen from lung alveoli.
- Kayyali, Tareq** Chemistry Ohio Rm. 1:30 - 3:00  
*In Situ Alkyl and Acyl Azide Synthesis Using p-ABSA/DBU*  
 The commercially available sulfonyl azide p-acetamidobenzensulfonyl azide (p-ABSA) reacts with the organic base 1,8-diazabicycloundec-7-ene (DBU) to produce an organic soluble salt that serves as a safe source of azide anion. We are developing safe routes to important organic azides, such as alkyl and acyl azides, by using this salt in reactions with simple substrates such as alkyl and acyl halides. The chemistry developed thus far, the use of microwave heating to speed up reactions, as well as the use of Infra-red spectroscopy to follow the course of reactions will be presented.

- Keller, Christopher** Mechanical Engineering James Gallery 11:45 - 12:00  
*Testing Apparatus for Nylon Bearing Chair Swivels*  
 Many of the chairs in our everyday environment are designed to swivel. The swivels that are most commonly used for these chairs utilize metal ball bearings. Ball bearing swivels wear out over time, often causing them to fall from the track. An inventor created a swivel that uses nylon instead of ball bearings. This design has proven to be much more reliable and safer, as the bearing stays in place even after the swivel itself has loosened from continuous use. Currently a machine tests the swivels, but there is no way to accurately quantify the test parameters or the results of the test. Consequently, it is impossible to complete an accurate comparison between the single nylon bearing and the ball bearing swivels. Therefore, an improved machine was built to perform quality testing on the swivels. The machine will test the swivel in a realistic manner. A force was applied to the swivel in a manner equivalent to actual use. The swivel was rotated via a belt drive for at least 500,000 revolutions. This machine was able to test multiple types of chair swivels, including rocker box and bar stool swivels. The entire machine, as well as the swivels, was put through a computerized stress analysis as well as a manual check of the computer results. The swivel was first designed in a 3-D modeling software package, and then imported into a stress analysis package.
- Kelly, Devin** Pre-Medicine Ohio Rm. 1:30 - 3:00  
*Conformational Analysis Using Chem3D: Cyclohexanes to Synthetic Carbohydrates*  
 In Organic Chemistry 3719 and 3720 we cover the basics of how organic molecules adopt lowest energy shapes, or conformations, based on steric effects and the general attempt within molecules to avoid destabilizing interactions. For the Honors component of these classes we have taken the ideas further and, in 3719, used the Chem3D program (from CambridgeSoft) in order to model various cyclohexane derivatives. This exercise allowed us to see that the idealized form of a ring, for example in a cyclohexane derivative, is perturbed by adding bulky groups in axial positions. Often the ring adopts a shape that is quite far from the ideal chair conformation. In Chemistry 3720 we have taken these ideas further and studied the minimized shapes of several synthetic carbohydrate analogs that have been made at YSU. This presentation will detail our work with Chem3D and will include conclusions about the preferred geometries of the carbohydrate mimics.
- Khodari, Ahmed** Mechanical Engineering James Gallery 4:15 - 4:30  
*SAE Supermilage Competition: Fuel Milage Maximization Through an Internal Combustion Engine*  
 This presentation covers the body and chassis components of the Supermileage vehicle. The need to maximize fuel efficiency is becoming ever more pertinent in our day-to-day life. The increasing population in our country will lead to an increase of more drivers and more vehicles, which in turn, will lead to greater fuel consumption. Since gasoline is a non-renewable resource, there is a need to maximize fuel efficiency in today's vehicles. The object of the Society of Automotive Engineers (SAE) Supermileage Competition is to apply new technology in the field of aerodynamics, thermodynamics, and heat transfer. This is an international competition, which includes collegiate and high school teams and takes place every year at the Eaton Testing Facility in Marshall, Michigan. Each team was to design a vehicle, within certain constraints set forth by the Society of Automotive Engineers, in which new technology from around the globe was applied in order to achieve the best fuel economy while still providing sufficient acceleration, braking abilities, and other typical driving factors such as visibility and maneuverability. Each vehicle consisted of a single cylinder internal combustion engine with the use of electronic fuel injection, or conventional carburetion. For this particular vehicle, one of the three wheels was used to propel the vehicle from the rear while the remaining two wheels in the front of the vehicle were used to steer.
- Khumprakob, Elizabeth** Nursing Pugsley Rm. 12:00 - 12:15  
*Wake Up*  
 From the celebration of Christopher Columbus as a "hero" to the absurdity of top stories that make the national news, Americans live in a country that operates with much less honorable intentions than most could conceive of. Common sense and logic are the only rose colored glasses needed to see a world which could be exponentially better. With the polar ice caps melting, shouldn't our government be more concerned about preventing global-scale environmental changes instead of staking out territory in the newly unfrozen seas? These topics and more are to be examined and solutions presented for all to become involved in.
- Kimbell, Sara** Master of Music Bresnahan I Rm. 10:30 - 10:45  
*Robert Schumann: The Clara Ciphers*  
 A leader among Romantic musicians, a profound composer of the German Lied, an insightful and creative music critic: Robert Schumann played many different roles throughout his lifetime. He had a fascination with coded messages and ciphers, and used them openly throughout his life – special initials, nicknames, homophones, anagrams and other devices. Schumann's fascination with ciphers manifested within his music essays and critiques, where he often wrote through the eyes of his fictional characters, such as Florestan and Eusebius. Because of his true Romantic nature, it is of little surprise that they eventually crossed over into his music manuscripts, appearing in musical ciphers, themes and programmatic character pieces. However, Florestan and Eusebius were not the only faces in Schumann's music, a much fairer and softer face often resided within the notes – that of his beloved wife, Clara. The purpose of this paper is to examine three specific Clara themes and ciphers and the possible inspiration behind Robert Schumann's cipher methodology. Concluding the examination is an in-depth study of Schumann's song cycle, Dichterliebe, and the Clara themes and ciphers within. Through his music, Schumann sought to assimilate discursive thoughts and concepts with expressive form and feeling, not only combining words with music in the form of Lieder, but also creating music from words, ciphers in the form of chords and melodies, embodying his dearest ideas, thoughts and people.

**Kitt, David** Electrical Engineering James Gallery 8:30 -8:45

*Data Acquisition Design for the Enhancement of the Baja SAE Car*

The Youngstown State University Baja SAE team wants to keep track of several measurements occurring while their car is competing. This includes recording data to an SD card for analysis and review for future design and performance. This data will allow the team to prevent hazardous conditions and also prevent greater damage and costs from occurring. The main focus of the project will be to design a data acquisition system to record, analyze and display the acquired data of the Baja SAE Car. The components of the data acquisition system include appropriate sensors that convert any measurement parameter to an electrical signal, which is acquired by data acquisition hardware. Acquired data will include GPS, acceleration in the x, y, and z axis's, temperature, and voltage. A PIC 18F4520 microcontroller will be used to process all acquired data. The data will be collected and stored on an SD data logger. Completion of this project will include all documented designs, a working prototype, and design for practical use on the Baja SAE Car.

**Knapp, Steve** Master of Science in Chemistry Ohio Rm. 1:30 - 3:00

*Structure and Preliminary Biological Evaluation of N-Glycosyl-1,2,3-triazoles*

We are building various N-glycosyl analogs of simple carbohydrates that might be capable of interacting, and thus modulating, the action of important enzymes such as glycosidases which are responsible for the manipulation of sugars in vivo. The chemical synthesis of N-glycosyl-1,2,3-triazoles is straightforward, from readily available glycosyl azides, and the detailed structure of these compounds follows from solution NMR as well as solid state X-Ray diffraction studies. Initial enzymatic assays using commercially available glycosidases suggest that these compounds do not act as inhibitors; these results are rationalized based on the detailed compound structure in relation to the known mechanism of action of the glycosidase enzymes.

**Knopp, Jessica** Master of Science in Education Ohio Rm. 10:30 - 12:00

*School Counselors Role in Promoting Healthy Partner Relationships*

This presentation will discuss the need for school counselors to be competent in addressing abusive partner relationship and promoting healthy relationships between students. The presenter will discuss the impact of abusive partner relationships on the academic, career, and personal/social development of students. The presenter will provide practical interventions consistent with ASCA National Model that school counselors can utilize to promote healthy partner relationship among students.

**Konda, Venkataramana** Chemistry Ohio Rm. 8:30 - 10:00

*Transposon Mutagenesis of a Selenite Resistant Strain of Enterobacter*

A multi-metal resistant strain of *Enterobacter cloacae* (*E. cloacae*) grows when exposed to toxic salts of mercury, cadmium, zinc, copper and selenium. In general, bacteria respond to toxic metal concentrations using efflux mechanisms, metal transformation (reduction and oxidation), and sequestration. Transposon mutagenesis was used to generate 4 selenite sensitive and 1 Cd/Zn sensitive strains of *E. cloacae*. DNA sequencing of the mutagenized genes suggested that a polyphosphate kinase, a sporulation domain protein, a Lon protease and a type-II Sec protein may be involved in selenite resistance. In addition, a P-type ATPase may be involved in Zn resistance. The sporulation domain protein and Lon protease may be expressed in response to selenite-induced oxidative stress, the polyphosphate kinase may be involved in selenite reduction and processing and the type-II Sec protein may be involved in selenite efflux. The P-type ATPase may be involved in zinc efflux. Finally, the sequence of two cloned PCR fragments indicated that the *E. cloacae* strain contains genes for copper and mercury resistance. By studying metal-resistance mechanisms, it may be possible to develop strategies to clean metal-contaminated waste sites.

**Kontz, Lora** Social Studies Pugsley Rm. 11:45 - 12:00

*The Influence of Railroads in America*

Railroads have been a major influence in the growth and prosperity of American cities. Before the era of railroads, cities were the result of slow and expensive transit, and beyond certain limits their growth became almost impossible. With the advent of railways, this difficulty ceased and cities and towns expanded almost indefinitely. They have linked American cities across the continent and created an urban network system. This urban network system led to American industrialization and influenced today's modern society. Railroads made communication and transportation more effective. Communication between cities traveled faster and greater distances than ever before. Life styles changed dramatically. Cities across the continent began to blossom. The introduction of the railroads influenced government, economics, and capitalism. In this essay, four topics are discussed concerning the influence of railroads: the first American railroad, railroads influence during the Civil War, the transcontinental railroad, and Pennsylvania's historical monument, the Kinzua Viaduct.

**Kopelos, Justin** Mechanical Engineering James Gallery 3:45 - 4:00

*PB & J Vehicle Barrier*

In today's society, traffic is in abundance over all parts of the world. Considering this, some facilities require the restriction of vehicle access. As a solution, a retractable bollard design was proposed. The PB & J barrier was named after the inventors of the barrier. The design entails that the barrier block one lane of traffic from a 6800 kg (15,000 lb) vehicle traveling at 48 kph (30 mph). The design was modified to fit various environmental constraints. It was engineered to withstand temperature fluctuations of -7 °C to 60 °C (-20 °F to 140 °F) and have the ability to resist natural reoccurring threats, like water (ice, snow etc). One of these preventions implemented was a water-flow system that effectively minimized moisture contact. Another design constraint applied was efficient energy consumption and a life expectancy of twenty years. The power supplied was between the range of 110 and 220 volts using a capable electric motor. To reduce life diminishing hazards, the barrier was made retractable into the ground encased in a reasonably sealed cavity. An advantage to using the vehicle barrier was that the installation process was kept in mind during the design process. The unit can be conveniently positioned directly into the ground all at once. The steel "box" structure with barrier equipment already affixed was lowered into the ground. The fully retractable bollard design was ensured to conform to necessary standards.

**Kovachik, Michael** Electrical Engineering Ohio Rm. 10:30 - 12:00  
*Inductive Speaker System*

Amplifiers are used for many applications of everyday life from small stereos to major production halls, stadiums, and movie theaters around the world. The problem that comes along with this is all the wires that need run to the speakers and the amplifier from the power source. We plan to develop an amplifier connected with a magnetic coil to make a speaker system that can easily be removed when not in use by transferring power through the magnetic coils. Car audio systems are a big business with teenagers as well as adults. The problem with this is that many teenagers share a car with their parents. Our design will make this no longer an issue in any car. The teenager can now have a loud audio system in the car, but then when mom or dad goes to drive it they can just lift the speakers out and it's like nothing was ever there. With most adults this can also be a problem when trying to haul or transport a larger object in the trunk. This way the speaker system can easily be removed with little hassle and no wires to disconnect or have to deal with, just lift the box out and be on your way.

**Kudary, Jaime** Accounting Pugsley Rm. 2:00 - 2:15  
*Financial Literacy Among College Students*

The average college student incurs student loans to pay for education and will graduate with a debt burden of nearly \$20,000 per the 2003-2004 National Postsecondary Student Aid Study. This is one of the many reasons why the Kappa Xi Chapter of Beta Alpha Psi is committed to helping college students become financially literate. In the past, Kappa Xi found it difficult to manage a financial literacy program, but have since seen it grow exponentially. The past difficulties faced were not the result of poor effort, but perhaps a lack of support. This year, Kappa Xi has worked with faculty members to promote the program. Training sessions were held before the team began giving presentations on topics such as credit use and savings. Audiences included business and honors students. In addition, Kappa Xi presented to members of the community. Not only were audience members taught to manage their money and improve their well-being, but the program also led the presenters to learn about themselves. Kappa Xi hopes to expand the financial literacy program even further. Besides targeting more college students, presentations will be given to other groups in the community. In addition, Kappa Xi plans to collaborate with the Volunteer Income Tax Assistance (VITA) program to educate clients on how to make the most of their tax refunds.

**Kummari, Rani** Electrical Engineering Coffelt Rm. 11:00 - 11:15  
*Electrical Properties of Schottky Barrier Diodes on n-type 4H-SiC using W2B5 Sch*

We have fabricated and characterized two sets of Schottky barrier diodes (SBD) based on n-type 4H-SiC using tungsten boride (W2B5) Schottky contact. The back side ohmic contact was made by depositing Ni/Ti/Ni multilayer followed by annealing in a rapid thermal processor (RTP) in a nitrogen environment at 950 oC for 2 min. The electrical characteristics were determined from current-voltage (I-V) and capacitance-voltage (C-V) measurements. On one set of diodes, we deposited the W2B5 Schottky contact at 20 oC. The average energy barrier and the ideality factor determined from the I-V measurements were both found to be 1.10 eV; and these values remained relatively unchanged even after annealing for 20 min at 600 oC. In the second set of diodes, the W2B5 Schottky contact was deposited at 600 oC and its energy barrier was found to be 1.20 eV, and this increased to 1.30 eV after annealing for 20 min at 600 oC. The ideality factor however decreased from 1.26 to 1.16 following the annealing. The significance of these values, especially for high temperature device applications will be discussed in our presentation.

**Kunati, Sandeep** Chemistry Ohio Rm. 1:30 - 3:00  
*Hydride Generation Laser Induced Fluorescence for Trace Measurement of Tellurium*

Laser induced fluorescence (LIF) has shown promising results in trace elemental analysis, especially when combined with hydride generation sample introduction which provides increased sensitivity for some metals and metalloid elements compared to other sample introduction methods. In this project, a combination of hydride generation sample introduction with LIF detection has been investigated for trace analytical measurements of tellurium. The volatile tellurium hydride was decomposed into atoms in a hydrogen flame atomizer. The fluorescence for tellurium was generated by using a tunable dye laser pumped by a Nd:YAG laser operating in the third harmonics (355nm) at 10 Hz pulse rate. The tellurium atoms were excited by the laser light and emitted fluorescence that was detected and recorded. The signal to noise ratio and the limit of detection were improved by optimizing several experimental factors, including the laser beam position in the flame. Factors affecting the production of the hydride, fluorescence generation and the instrumental parameters were studied. Calibration curves were evaluated by using the selected analytical lines and the detection limit was determined to be 8 ppt. Presently other trace elements including Sn and Bi are under investigation using a Laser Induced Breakdown Spectroscopy (LIBS) detection approach for the metal hydrides, in which a laser produced plasma is used as the atomic emission source.

**Kutsko, Rebecca** Astronomy Ohio Rm. 8:30 - 10:00  
*The Search for Asteroids in the BOKS Survey Field*

BOKS is an astronomical imaging survey, consisting of 1896 images taken over 27 nights in the constellation Cygnus. The original goal of BOKS is to search for transiting extrasolar planets, but the enormous amount of data makes it helpful in other areas of astronomy. Here, we present preliminary results of a search for moving objects within the BOKS data. We describe the methods and software we have developed especially for this search. Most of the moving objects are likely to be previously undiscovered asteroids in the Solar System, and once found, we will be able to determine their orbital properties. We will compare our results to the other known asteroid surveys.

- Lanc, Irena** Computer Science Ohio Rm. 8:30 - 10:00  
*Modelling Forest Dynamics Using Field Data from Zoar Valley, Western New York*  
 Zoar Valley, in western New York State, is a rare example of a largely unaltered riparian zone. This rare find for the eastern United States contains anthropogenically undisturbed riparian ecosystems. We have catalogued here a 400-year riparian vegetational chronosequence, from newly colonized depositional bars to raised terraces supporting broadleaf-dominated old growth. Canopy and understory composition quantified within 70 survey quadrats of varying stand age suggest succession may follow multiple pathways that appear to diverge early in this chronosequence. Because species compositional changes in forest systems occur too slowly to observe directly, we are employing computer modeling (e.g. SimForest, Netlogo) to simulate alternate successional pathways and outcomes while manipulating important starting parameters such as initial species composition and/or landform age and type. Additionally, we are manipulating the age maxima of selected species in an attempt to simulate the effects of introduced forest pathogens such as beech bark disease and hemlock woolly adelgid.
- Lerach, Jordan** Chemistry Ohio Rm. 1:30 - 3:00  
*The Gas Phase Ligand Exchange of Cu & Ni & #946;-diketonate Complexes*  
 Gas phase rearrangements of a series of hetero-ligand Cu and Ni & #946;-diketonate complexes were examined using double sector mass spectrometry. The ensuing reactivity of symmetric acetylacetonate and hexafluoroacetylacetonate metal bound species, as well as the asymmetric trifluoro-pivaloyl acetylacetonate substituted complexes were investigated where ligand exchange was observed to be the predominate reaction pathway.
- Lewis, Sarah** Political Science Pugsley Rm. 11:15 - 11:30  
*Peru's Shining Path: Terror Tactics and Thought*  
 In the late twentieth century, a militant sect derived from the Communist Party of Peru grew in numbers and desperation to overthrow the "US backed regime" of democratically elected President Alberto Fujimori. Citing fascist national leadership, military efforts to eradicate the Party, and U.S. imperial puppeteering, university professor Abimael Guzman led an active army for over a decade to pursue a form of Maoism more pronounced than previous revolutions. His Shining Path, Sendero Luminoso in Spanish, sought to seize power at all costs – except through election. Shining Path members began their activities by burning ballots in Chuschi, Ayacucho during Peru's first democratic election. The event, given little attention at the time, launched Sendero Luminoso's war, ultimately resulting in the disappearance or death of an estimated 60,000 people; the Shining Path is credited with about 30,000 of these casualties. Since the imprisonment of Guzman in 1992, Shining Path membership and activities have dwindled, yet periodic terrorist activity in Peru is attributed to the several hundred remaining members. The research will focus on the background and ideology of the Shining Path, its relationship to other terrorist groups, and the effects of Shining Path on area politics
- Lipp, Lindsay** Mechanical Engineering Pugsley Rm. 1:30 - 1:45  
*E-Commerce: How the Internet Affects Global Economy*  
 Buying, selling, trading, and marketing are a huge part of life in the United States. Economic success depends on our needs and wants and our desire to bring about change in ourselves and our environment. With the gradual invention of the Internet, the process of advancing commerce was put into action. Trading sites were invented, providing an extensive array of used items from all across the globe and allowing for worldwide auctions to take place. Businesses began advertising more heavily, using pop-ups and virtual ads to appeal to the public. In fact, in today's world, practically every business has its own website, with contact information and online brochures available to anyone with access to the web. Because it is not regulated, however, Internet consumers must be cautious when making online purchases, for many have fallen victim to the deceptive schemes played out by false merchants. Fraud and identity theft are perhaps the best known, but still others exist. What is the government doing about these acts, and how can they be avoided? Despite its slight precariousness, the World Wide Web has proven itself an advantageous addition to the economy, enhancing growth potential and strengthening business-to-consumer bonds.
- Lisko, Jason** Mechanical Engineering James Gallery 2:00 - 2:15  
*Design of The Hammer: an Anti-Ram Vehicle Barrier*  
 In current society, strong security has become a high priority. The ability to restrict unauthorized vehicles from secured premises is desired. This study provides a design of an anti-ram vehicle barrier that will prevent a 6800kg (7.5 ton) vehicle, moving at 48km/hr (30mph) from entering a property. The proposed design consisted of two concrete-filled posts with a lateral plate stretching across one standard lane of traffic. A winch system was used to raise and lower the mechanism within 30 seconds. The model analyzed stresses within the model after an impact load was applied. This design utilizes a combination of a retractable plate and retractable post model. The computer models showed the design was safe. The challenge of this design was to meet all requirements set forth, while making a robust design. Some of these requirements included; the applicable standards of AISC, ASME, or AISI, withstanding extreme temperatures, and operating for 100,000 cycles. While safety was of utmost concern, ease of performance and manufacture were also important along with a low manufacturing cost. The goal of this design was to meet an overall manufacturing cost of \$140,000 per unit. In conclusion, methods of stress analysis and dynamics were used to verify the final design.
- Litschel, Eric** Music Bresnahan I Rm. 10:45 - 11:00  
*That's Precisely What I Had in Mind!*  
 As listeners we often wonder what a composer could possibly have had in mind while composing a work. A convincing answer to this question is almost never supplied. When the composer does provide an answer it is nearly always suspiciously pithy or plainly sentimental or seemingly pathological. None of these satisfy. Confused and frustrated the listener gives up pursuit. Yet, the supposed intention of the composer remains inextricably associated with the import of the music. It is this association that I aim to disentangle a bit. What do we describe when using the word intention? Is intent synonymous with meaning? Can intentions be conveyed to the listener by the music alone, or does the listener project intentions onto the music? I draw upon scholarship in the areas of semiotics, philosophy of mind, and neuroscience in giving a succinct introduction to the difficulties of the aforementioned questions.

- Lockard, Nickolaus** Electrical Engineering James Gallery 9:30 - 9:45  
*Induction Heating Coil Load Monitor Digital Acquisition & Display Board*  
 There exists a need for an accurate representation of the electrical parameters at the load of an induction heating and melting coil. Ajax Tocco Magnethermic, manufacturer of industrial heating power supplies and coils require an addition to their already existing coil load monitor board; a data acquisition board. The data acquisition board, known as the daughter board, will feed off the analog circuitry of the coil load monitor board and return a digitized output to a PC and display board. The daughter board will be a necessary piece of equipment for technicians of the power supplies and load coils, as well as, a vital tool for engineers. This board will give detailed electrical parameters for individual induction coils and the ability to obtain specific heating patterns for certain processes.
- Lowry, Sarah** English Humphrey Rm. 2:15 - 2:30  
*The Color Purple? Gay/Straight Descriptor Correspondence in North-East Ohio*  
 Robin Lakoff's comment about gay men's language use matching women's was one small quip before the deluge of gay language and speech research that soon followed. This study returns to Lakoff's comment and poses the question of whether gay men's word choice matches women's. To determine this, we ask anonymous subjects to name colors presented on swatches and self-identify their sexual preference after they complete the survey. An expectation of gay male/straight female correspondence is expected due to stereotype and Lakoff et al.'s theories regarding gender, power, and language; however, sexual identity has changes drastically since the Seventies, so results could vary. This project will identify some of those changes relevant to speech and language, document the process of gay language research in the context of sociolinguistics, and review collected data in light of several important points intersecting the above topics.
- Lowry, Sarah** English Jones Rm. 1:30 - 1:45  
*The Orphan's Oral Defense: Language and Social Mobility in Two Victorian Novels*  
 Victorian England was a time of growth, transition, and uncertainty, which is why many Victorian authors chose the orphan as an archetype to personify the consequences of a rapidly changing society. The orphan child, robbed of the traditional guardians of fragile youths, developed in a world without shelter or comforts aside from what he or she could provide for him or herself. Faced with such adversity, the decision how to carry on was onerous, especially for a juvenile. This vulnerable character had two options from which to choose: he or she could cower at the monster of the unknown, or he or she could attempt to overcome his or her fears and rise against that which frightened him or her most. To complicate matters further, these orphans had little to no financial or communal support to assist them, so their fates were contingent upon their physical and mental resources. Conventionally, Victorian orphans began their adventures as pre-adolescents; therefore, fashioning and maintaining keen cognitive abilities was most valuable to them. In Charles Dicken's David Copperfield and Charlotte Brontë's Jane Eyre, the orphan protagonists, David and Jane, exercise their wills through verbal interactions with those around them, which allow them to stay afloat in a world that threatened to drown them, and eventually, it is language that empowers them to sail against the current towards calmer seas.
- Macali, Mark** Mechanical Engineering James Gallery 3:30 - 3:45  
*Anti-Truck Barrier*  
 The inability to protect the entrance and exit of a secure facility poses a serious threat to safety of the employees and property. The solution for securing unwanted access was the Rapid Anti-Truck Terrorist Remedy and Perimeter Protector (R.A.T. T.R.A.P.P). The Anti-Ram Vehicle Barrier secured a 3 meter (10 ft.) wide lane of traffic in one direction from a 6,800 Kg (15,000 lbm) truck traveling at 50 Km/h (30 Mph) from penetrating less than 1 m (3 ft.). The Rapid Anti-Truck Terrorist Remedy and Perimeter Protector consisted of a large steel counter-weighted plate operated by a chain drive powered by an electric motor. The counterweight raised the plate quickly, while the chain drive lowered the plate at the command of the operator.
- Malich, Ashley** Master of Science in Chemistry Ohio Rm. 1:30 - 3:00  
*Rhodium(II)-catalyzed Decomposition of Furanose-derived Diazoesters*  
 There are many important naturally occurring organic compounds that feature two furan rings fused together. These compounds are challenging to synthesize, especially so if they contain chiral centers. In this project, which is supported by a grant from the Petroleum Research Fund of The American Chemical Society, we are investigating the use of organometallic chemistry for the efficient formation of various fused furan systems. Specifically, we are building platforms based on readily available furanoses that have diazoester groups attached, and studying the outcome of Rhodium(II)-catalyzed decompositions. Recent results from this work, including X-Ray and NMR experiments, will be presented in detail.
- Malmsberry, Nate** Civil & Construction Engineering Bresnahan I Rm. 2:15 - 2:30  
*Testing of Masonry Lintels*  
 Testing of Masonry Lintels – work in progress This presentation documents the design, fabrication, and testing of a full scale masonry lintel. The tests evaluate the application of the strut-and-tie analysis model for masonry walls. Evaluation of the problems encountered with a failed prototype testing frame serves as the starting point for the redesign and fabrication for future tests. Based upon data from the initial testing, the test frame was redesigned and successfully tested. The results of the second test are evaluated to compare predicted failure modes (theoretical versus actual test data) of the masonry lintel. Future work will include a series of full-scale tests to complete a parametric study of the application of this analysis technique.
- Mariacher, Michelle** Electrical Engineering James Gallery 9:15 - 9:30  
*Hydrogen Dissociation from Salt Water*  
 An alternative fuel source is designed to create energy by using the basic principle of radio waves simulating the resonance frequency of a catalyst. This catalyst will be simulated in salt water, which the radio frequency will be directed through the medium. Exposure to radio waves creates a separation in the molecules causing the magnet bonding of oxygen-to-oxygen and hydrogen-to-hydrogen. The newly bonded molecules are released and are capable of being ignited. This ignition of the hydrogen creates a lot of energy in form of heat. The process of harnessing this energy will be the ultimate goal of this project. The efficiency of this design will be determined.

- Marino, Charles** Mechanical Engineering James Gallery 10:30 - 10:45  
*An Inquiry into Magnetic Interactions and Principles for use in a Permanent Magnet*  
 Magnetic motors have been around for a long time. However, the limitations have been to use magnets and electrical fields to produce purely rotational motion. It is desirable to have a motor that is able to turn rotational motion into linear motion, and vice versa. With the proposed magnetic motor's revolutionary design, this has been achieved using two different magnets, linear and rotational, with a voice coil acting as a motor. The current state of design has been less than desirable, and very little engineering analysis has been performed on this design. While the concept is brilliant, it is nowhere near production ready. Engineering judgment was used in determining current weak points within the design. There are several key components that are to be improved. First and foremost, a good understanding of magnets is needed to fully understand how to gain the most efficient energy output. Realizing that magnets produce the strongest field when placed at a 45° angle, it became quite apparent that the rotational magnets should have the same inner diameter as the linear magnet's outer diameter. Using these parameters, the desired effect was achieved. The voice coil design was improved. With the current design, it is easy to misalign the motor itself, which inadvertently shorts out the voice coil. Also, a coupler was used to connect the voice coil to the linear shaft. By placing two voice coils on the guide of the outer linear shafts, shorts that may occur were avoided.
- Marshall, Joshua** Biology Jones Rm. 11:15 - 11:30  
*An Investigation of Floating Debris and Subsurface Deposition In San Salvador*  
 Debris is carried onto the eastern side of San Salvador Island and deposited daily, sometimes amassing into very large piles. This investigation examined the buildup of debris in the water to determine whether or not the majority of debris becomes permanently entombed in the sea floor or whether the debris is carried back out to sea. Most of the debris is either carried away or deposited on the beach, but it was found that there is a steady buildup of debris in areas sheltered from the tides by coral reefs. This investigation also experimented with different techniques in collecting and documenting the debris to find the most effective methods. Giving the time limit of one week for the project and the adverse weather and tidal conditions, the most effective method found was visual reconnaissance with a team of snorkelers.
- Mason, Drew** Electrical Engineering Ohio Rm. 10:30 - 12:00  
*Inductive Speaker System*  
 Amplifiers are used for many applications of everyday life from small stereos to major production halls, stadiums, and movie theaters around the world. The problem that comes along with this is all the wires that need run to the speakers and the amplifier from the power source. We plan to develop an amplifier connected with a magnetic coil to make a speaker system that can easily be removed when not in use by transferring power through the magnetic coils. Car audio systems are a big business with teenagers as well as adults. The problem with this is that many teenagers share a car with their parents. Our design will make this no longer an issue in any car. The teenager can now have a loud audio system in the car, but then when mom or dad goes to drive it they can just lift the speakers out and it's like nothing was ever there. With most adults this can also be a problem when trying to haul or transport a larger object in the trunk. This way the speaker system can easily be removed with little hassle and no wires to disconnect or have to deal with, just lift the box out and be on your way.
- Mathes, Greg** Mechanical Engineering James Gallery 4:30 - 4:45  
*The Great Moonbuggy Competition: Hub Design and the Hydraulic Braking System*  
 This presentation covers the hub design and the hydraulic braking system. In order to replicate the original moonbuggy mission, the race consists of an environment that resembles a lunar terrain. Different obstacles such as craters, rocks, inclines, lava ridges, and lunar soil throughout the course will test the design and durability of the buggy. This year the moonbuggy was designed to improve on last year's design and place higher in competition. After careful analysis of the moon buggy, the needed improvements were: 1) to reverse the rear pedaling system, 2) to improve the design of the hub box, and 3) to add hydraulic brakes. Research was then completed in order to maximize the effects of these changes. In order to reverse the pedaling system, it was decided that new sprockets and chains were needed. The current ones were either bent or improperly positioned. Three derailleurs/tensioners were added to enable the reverse pedaling to occur at the rear of the vehicle. The goal of the improvements made to the hub box was to simplify the design. Last year's design was poorly fabricated and caused failure in the bearings. The new design will allow for easy accessibility and assembly. Hydraulic brakes will be used on the new design due to malfunction of the mechanical brakes used last year. The issue with mechanical brakes involved dust and debris that was trapped in the brake line. This will be eliminated in the new design.
- Matta, Anand** Chemistry Ohio Rm. 1:30 - 3:00  
*Formaldehyde and Sulfur Dioxide Detection by Using Laser-Induced Fluorescence*  
 Laser induced fluorescence (LIF) is the optical emission from molecules that are excited by absorption of electromagnetic radiation from a laser source. In this project, techniques are being developed for the detection of trace concentrations of formaldehyde (HCHO) and sulfur dioxide (SO<sub>2</sub>). These approaches take advantage of spectral coincidences between the emission wavelengths of a Nd:YAG laser and absorption by HCHO and SO<sub>2</sub>. In the LIF approach the third harmonic of a Nd:YAG laser at 355 nm is used for formaldehyde and fourth harmonic at 266 nm is used for SO<sub>2</sub> as the excitation wavelengths. The calibration response is linear in the range 1-57 ppm HCHO. The current limit of detection (LOD) is 0.6 ppm HCHO. Studies at 341 nm excitation wavelength for HCHO and 199 nm for SO<sub>2</sub> are also being conducted, where these wavelengths were obtained by using Stimulated Raman Scattering (SRS) of the laser radiation in compressed hydrogen gas. The calibration response is linear in the range 1-9 ppm SO<sub>2</sub>. The current LOD is 0.4 ppm. Studies of the analytical figures of merit are underway for both of these excitation wavelengths. To make this approach as relevant as possible to the ultimate development of an atmospheric monitoring system, all measurements are carried out under ambient conditions. It is anticipated that these approaches will avoid interferences that occur in the conventional methods for both SO<sub>2</sub> and HCHO measurements.
- Mattson, Andrew** Electrical Engineering Ohio Rm. 10:30 - 12:00  
*Converting Human Kinetic Energy to Electricity Using a Stationary Bike*  
 Our goal is to modify a stationary exercise bike in such a way that it can be used as a generator while someone is exercising. The AC electricity generated while pedaling the bike will be converted into DC using a rectifier and a voltage regulator so that it can be stored in a deep cycle 12V battery. Once the battery has enough electricity stored, it can be passed through a power inverter and used as if it was coming straight from the electric company.

**Maus, Stephanie**

Biology

Ohio Rm. 8:30 - 10:00

*The Effects of Calyculin A and Ryanodine on Aortic Smooth Muscle Contractions*

This study investigated the role of myosin phosphatase and ryanodine-sensitive calcium channels on the contractile activity of aortic smooth muscle. The aortas of adult male Long-Evans rats were isolated, cut into 3mm rings, and mounted within buffer-filled tissue chambers. Temperature was maintained at 37°C. Each aortic ring was connected to a force transducer and tissues were allowed to equilibrate for one hour. Aortic rings were contracted with norepinephrine and relaxed with sodium nitroprusside (SNP). Contracted tissues were treated with either DMSO (control), calyculin A (myosin phosphatase inhibitor), or ryanodine (sarcoplasmic reticulum calcium channel inhibitor) 10 minutes prior to the addition of SNP. Results demonstrated that treatment with ryanodine dramatically reduced the frequency of contractions ( $p < 0.001$ ), but had no effect on their amplitude. In contrast, treatment with calyculin A had no effect on the frequency of contractions, but demonstrated a trend to increase their amplitude (DMSO = 26.9 +/- 8.9 mg vs. Calyculin A = 49.8 +/- 14.5 mg). These results suggest that myosin phosphatase may play a role in the force of contraction, whereas the sarcoplasmic reticulum calcium channels influence the frequency of contraction in aortic smooth muscle. Future studies are needed to determine whether alterations in these smooth muscle cell mechanisms may lead to vascular diseases such as hypertension.

**McCain, Andrew**

Electrical Engineering

James Gallery 9:45 - 10:00

*Stiffness Differences between the Fingers of the Dominant and Non-Dominant Hands*

Most people rely on a dominant hand, i.e. left hand, for daily activities. Understanding the differences between the biomechanical features of dominant and non-dominant hands would provide insight into the effects of frequent usage on flexibility and stability of joints. Prior studies have focused on the effects of different diseases and injuries on finger stiffness. Little information appears to focus on the finger stiffness differences between dominant and non-dominant hands. The purpose of our study will be to examine the differences in stiffness between the [index] fingers in the dominant and non-dominant hands of adults. The respective finger was placed in a splint and mechanical loading was applied [perpendicularly] to the [middle] knuckle of the finger towards the palm of the hand. The controlled displacement loading (triangle wave) was applied via a lever arm controlled by an electric motor. The motor is voltage controlled by a digital to analog converter which is, in turn, controlled by a computer program, "Spike2." The force applied divided by the distance moved was determined as the stiffness of each finger. Three different trials of each type of experiment was performed on the subjects. Our presentation will outline the setup and background of our experiment, as well as results and conclusions of the work.

**McCullough, Bradley**

Mechanical Engineering

James Gallery 4:00 - 4:15

*Road Protection Guard: A Design of Anti-Ram Barriers*

The possibility of unwanted vehicles entering restricted areas throughout the country is a very real threat. This can include attacks on airports, government buildings, power plants and medical laboratories. The use of trucks to break through barriers and gain access to the restricted areas was the main point of this project. This study must meet many criteria including impacts, design, and easy maintenance. This work tested the durability, stopping distance, and damage caused to a truck weighing 6800 kg (15000 lbm) going 48 kph (30mph). The design incorporates three steel barriers filled with concrete, spaced 0.76 m (2.5 ft) apart and 1 m (3 ft) tall. Impact mechanics were also used to predict where the failure would occur in the structure before it happens. In the end, all of the analyses used will determine the structural design and safety of the Road Protection Guard (R.P.G.). Safety was the most important factor in the design, for any civilian bystanders in the area. Limiting factors such as maintenance, cost, and weather were also taken into account when the final design was produced.

**McCutcheon, David**

Master of Science in Chemistry

Ohio Rm. 1:30 - 3:00

*Synthesis of N-2-Modified Analogs of N-Acetyl-L-Fucosamine*

Many clinically relevant serotypes of *Staphylococcus aureus* ("Staph") protect themselves from destruction by the host immune system by building a complex carbohydrate-based layer called a microcapsule. This layer is made up of rare aminosugars such as N-acetyl-D-mannosamine uronic acid (D-ManNAcA), and N-acetyl-D-, and L-, fucosamines (D-FucNAC and L-FucNAC). With a view to producing analogs that might serve as antibiotics, we have developed routes to various N-2-modified L-fucosamines whose structures have been proven by NMR and X-Ray diffraction methods. This presentation will include details of our progress as well as the X-Ray crystal structure of N-acetyl-L-fucosamine itself.

**Meek, Brian**

Mechanical Engineering

James Gallery 11:15 - 11:30

*Heavy Capacity Lathe for Three Axis Milling Machine Upgrade*

Manufacturers of metalworking, strip processing, and extrusion equipment have a need for the capability to perform cylindrical and eccentric turning in-house due to increasing lead times for outside manufacturing and increasing product sizes, especially in the extrusion industry. To meet these needs, a three-axis milling machine was upgraded to a four-axis turning center by adding motor-driven spindle supports for work piece rotation. The spindle supports, much like the headstock and tailstock on a common lathe, were designed to hold and turn cylindrical work pieces of up to 163,201 kg (74,012 lbm) with speeds no higher than 50 rpm. Other requirements included a large electrically driven motor, an emergency braking system, gear reduction, precise positioning feedback, mounting equipment on both supports, and independent adjustment capabilities on the tailstock. The end product was an oversized lathe. Calculations were performed in all critically stressed areas of these supports to design sufficient frames and shaft housings. To meet the requirements for such a machine meant that the bearings needed to be capable of taking these high loads while maintaining accuracy in the machining process. To overcome the forces induced by the cutting tool as well as from the work piece inertia, the motor would need to be high in power so that in conjunction with gear reduction, large torques could be produced.

- Meikle, Thomas** Mechanical Engineering James Gallery 4:15 - 4:30  
*SAE Supermileage Competition: Fuel Milage Maximization Through an Internal Combustion Engine*  
 This presentation covers the body and chassis components of the Supermileage vehicle. The need to maximize fuel efficiency is becoming ever more pertinent in our day-to-day life. The increasing population in our country will lead to an increase of more drivers and more vehicles, which in turn, will lead to greater fuel consumption. Since gasoline is a non-renewable resource, there is a need to maximize fuel efficiency in today's vehicles. The object of the Society of Automotive Engineers (SAE) Supermileage Competition is to apply new technology in the field of aerodynamics, thermodynamics, and heat transfer. This is an international competition, which includes collegiate and high school teams and takes place every year at the Eaton Testing Facility in Marshall, Michigan. Each team was to design a vehicle, within certain constraints set forth by the Society of Automotive Engineers, in which new technology from around the globe was applied in order to achieve the best fuel economy while still providing sufficient acceleration, braking abilities, and other typical driving factors such as visibility and maneuverability. Each vehicle consisted of a single cylinder internal combustion engine with the use of electronic fuel injection, or conventional carburetion. For this particular vehicle, one of the three wheels was used to propel the vehicle from the rear while the remaining two wheels in the front of the vehicle were used to steer.
- Melchert, Amy** Mechanical Engineering James Gallery 2:30 - 2:45  
*Hydraulically Operated Gate Security System*  
 Unwanted entrants and terrorists are always a concern at places of high security. Terrorists may try to force entry into a secured complex with the use of large vehicles with the notion that the large size of the vehicle will ensure successful entry into the desired location. This requires higher security at the vehicle entrance portals of many government buildings, military bases, and other secure buildings. Often, bollard type barriers are used at the entranceways for this purpose. A design was generated for a "pop-up" type bollard named "Pneumatically Operated System of Traffic Control Barrier" (P.O.S.T. Control Barrier). This design was created to span one lane of traffic 3 m (10 ft). A series of five posts (two stationary and three operable) provided the necessary protection. The three operable bollards protruded and retracted into the ground via hydraulic cylinders below the surface. The unit was designed to exceed American crash rating, K4-L3, which means a 6800 kg (15000 lbm) vehicle traveling at 48 kph (30 mph) penetrated the barrier no more than 0.9 m (3 ft). Government testing will certify the barrier with this rating. Energy and stress calculations confirmed that this barrier would be able to withstand the impact and uphold the required rating, thus ensuring adequate security at any desired location.
- Melvin, Kelly** Criminal Justice Jones Rm. 4:00 - 4:15  
*Institutional Adjustment at a Juvenile Detention Center*  
 Juvenile detention facilities in the United States are typically under the jurisdiction of county ran governments. These facilities perform the same functions as their adult equivalents: detaining pretrial suspects, holding individuals awaiting placement, and as a sentencing option. This presentation examines institutional adjustment at a juvenile detention facility. The population, youths' behaviors while in the facility, and the programming and strategies utilized by the facility to address these behaviors are presented.
- Michael, Jeff** Mechanical Engineering James Gallery 1:30 - 1:45  
*Anti-Penetration Equipment Designed For the Obstruction of Vehicles*  
 In this age of worldwide security being a top priority among clients, it is important to protect people both and the places in which they work. One of the most vulnerable points in many of the secure locations is the access driveway. It was requested that a road barrier be designed utilizing several criteria: 1) be able to withstand a collision force with a 6800 kg (15000 lb) vehicle at 50 kph (30 mph) and render said vehicle inoperable; 2) have the ability to be quickly removed to allow for authorized admittance; 3) be a self contained, non-removable, subterranean structure; and 4) provide a reliable barrier. The barrier designed consisted of cylindrical shafts. Each shaft was made out of common steel pipe and was filled with structural grade concrete. The shafts were made retractable by the use of a 1750 rpm Dodge motor. The structural challenges involved were the creation of a continually reliable structure which had the structural integrity to withstand the specified forces, and the ability to have the barrier retract at a relatively fast rate. Ultimately, the design was confirmed through manual, computer and engineering analyses. The stresses were found and rendered safe compared to the provided guidelines and design factors.
- Miller, Melissa** Criminal Justice Ohio Rm. 3:30 - 5:00  
*Adolescent Centers: Should we have more?*  
 The purpose of this paper is to show what adolescent centers have to offer delinquent juveniles other than being placed in a guarded detention center. The research will be gathered through interviews with administrators from an adolescent center. Through this study I hope to gain data on what a positive facility this is for juvenile offenders.
- Miller, Chris** Mechanical Engineering James Gallery 2:15 - 2:30  
*Design of the No-Go Vehicle Barrier*  
 A problem occurs when a strong barrier must be easily concealable and the ability to be accessed for repairs when needed. The design barrier must adhere to standards of AISC, ASME, or AISI and protect a 3m (10 ft) wide area equaling one traffic lane. The purpose of this project was to design a versatile barrier that follows the previously mentioned guidelines. Each barrier used a 110 or 220 volt power supply and was retractable. Other characteristics of the barrier are an ability to work in a temperature range that is between -29oC to 60oC (-20oF to 140oF) and a capability of performing 100,000 cycles at a minimum speed of 30 seconds per cycle. The barrier was designed to be concealed when not in use, easily maintained, and repaired. The approximate life of each unit when not used specifically to stop a vehicle is about 20 years with predicted supply of 500 units per year at \$140,000 per unit. The flat plate barrier was raised and lowered by a chain driven by a motor, with a speed of 1750 rpm beneath the plate. At its maximum angle, the plate will lock into place until the motor is used for its return to the lowered position. While the plate was used it stopped the vehicle almost immediately on impact. The overall desired outcome of the design of this barrier was the ability of the barrier to stop a 6,800 kg (15,000 lb) vehicle traveling at 50kph (30 mph) and allowing the vehicle to travel no more than 0.9 meters (3 ft) after hitting the barrier.



- Mitchell, Jodi** Nursing Bresnahan II Rm. 11:45 - 12:00  
*Obesity and Polypharmacy in the Elderly*  
 The purpose of this research is to describe the prevalence of obesity and polypharmacy among a group of elderly residents of an assisted living facility, and determine whether a relationship exists between obesity, as reflected by Body Mass Index, and polypharmacy. Obesity rates continue to rise across all age groups, including the elderly. Because of their higher rate of chronic disease, the elderly also consume a disproportionate amount of medications. The health risks of polypharmacy are well documented, as are the health risks of obesity. If a link exists between obesity and the number of medications taken, this could potentiate the negative impact on overall health. Subjects were recruited from an assisted living, and information is being collected from medical records indicating age, gender, ethnicity, height, weight, and number/type of medications taken. Descriptive data will then be analyzed to explain what type of relationship, if any, exists between obesity and polypharmacy in this sample population.
- Moore, Halley** Chemical Engineering Bresnahan I Rm. 2:00 - 2:15  
*Separation of Water from Chemically Emulsified Oil*  
 Chemically emulsified oil and water, while making some parts of industrial processes easier, can become a hazardous waste problem. By finding a reasonable separation process, a company will save money both from waste disposal and from being capable of reusing resources. Various salts and salt combinations were used to demulsify the oil and water by changing ionic strengths. It was found that a combination of aluminum chloride (a small amount) and sodium chloride (near saturation) will separate the emulsion. A bench scale process was formed for complete separation and to purify water down to 20ppm oil. A scale-up model is proposed which would help industry with the waste disposal problem.
- Moparthi, Swarnalatha** Biology Ohio Rm. 8:30 - 10:00  
*Transposon Mutagenesis of a Selenite Resistant Strain of Escherichia.coli*  
 Bioremediation is a method in which microorganisms are employed to clean up a polluted environment. In the present study we used a multimetal resistant bacterium *Enterobacter cloacae* (*E. cloacae*), as our model of bioremediation. A 100 kb plasmid, pOR1, from *E. cloacae* conferred resistance to 40 mM selenite when it was transferred to *Escherichia coli* strain HB101 to create the new strain HB101(pOR1). Selenite is an oxidized form of selenium beneficial to the organisms at lower concentration but toxic at higher concentrations. To detect the selenite resistance genes, a transposon carrying a kanamycin (KanR) resistant gene was introduced into HB101 (pOR1). The transposon randomly inserted itself into the HB101(pOR1) genome conferring KanR resistance to this strain. Out of 4,035 KanR colonies, 62 were sensitive to selenite and presumably had selenite resistance genes that were interrupted by the transposon. Segments of these genes were sequenced and analyzed by the Basic Local Alignment Search Tool (BLAST). Previous work with metal resistant bacteria suggests that the interrupted genes may play four roles in selenite resistance: 1) selenite reduction to elemental selenium, 2) outer membrane maintenance due to the sequestration of elemental selenium near this membrane, 3) oxidative stress response caused by the selenite and 4) selenite efflux. By understanding the mechanisms of selenite-resistance, it may be possible to develop strategies for cleaning up metal contaminated sites.
- Moritz, Ashley** Civil & Construction Engineering Ohio Rm. 10:30 - 12:00  
*CCET Sourcebook*  
 The focus of this independent research project is to create a useful reference book for students in the Civil & Construction Engineering Technology (CCET) program that would encompass all of the major courses taken by a CCET student working towards their Bachelor of Science in Applied Science (BSAS) degree in CCET. The source book will have a section on each course, containing key concepts, definitions, and formulas pertaining to the class. There will be three phases to this project. The first phase is composing outlines of each course. Once the outlines are approved by the appropriate instructor who teaches the course (this phase in progress), phase two will commence – writing of the sections (this phase in progress). This book will contain diagrams, drawings, charts, etc. I plan for the layout of the book to be simple, and easy to follow. Once all of the individual sections are completed; Phase three – assembly of the source book. Present students can use it as a learning tool, because the material will be well organized, and condensed. Graduates can look back to the book to quickly find information. This reference tool is not meant to be a textbook; It will simply highlight important and practical data.
- Morlan, Denise** Criminal Justice Jones Rm. 5:00 - 5:15  
*The Use of Methadone in Correctional Facilities*  
 Drug offenders are filling up our prisons at an extraordinarily high rate. In 2002, a report by the Justice Policy Institute found that there are almost as many inmates imprisoned for drug offenses today as the entire U.S. prisoner population of 1980. The use of methadone by inmates may physically help the inmate as an individual and the inmate population as a whole in many ways. The purpose of this presentation is to discuss the use of methadone in prisons today. The presentation will include discussions on what methadone is, withdrawal and overdose symptoms, methadone treatment programs in correctional facilities in New York and in New South Wales and possible outcomes that naturally follow methadone use in prisons.
- Mount, Jeremiah** Mechanical Engineering James Gallery 10:30 - 10:45  
*An Inquiry into Magnetic Interactions and Principles for use in a Permanent Magnet*  
 Magnetic motors have been around for a long time. However, the limitations have been to use magnets and electrical fields to produce purely rotational motion. It is desirable to have a motor that is able to turn rotational motion into linear motion, and vice versa. With the proposed magnetic motor's revolutionary design, this has been achieved using two different magnets, linear and rotational, with a voice coil acting as a motor. The current state of design has been less than desirable, and very little engineering analysis has been performed on this design. While the concept is brilliant, it is nowhere near production ready. Engineering judgment was used in determining current weak points within the design. There are several key components that are to be improved. First and foremost, a good understanding of magnets is needed to fully understand how to gain the most efficient energy output. Realizing that magnets produce the strongest field when placed at a 45° angle, it became quite apparent that the rotational magnets should have the same inner diameter as the linear magnet's outer diameter. Using these parameters, the desired effect was achieved. The voice coil design was improved. With the current design, it is easy to misalign the motor itself, which inadvertently shorts out the voice coil. Also, a coupler was used to connect the voice coil to the linear shaft. By placing two voice coils on the guide of the outer linear shafts, shorts that may occur were avoided.



**Ogbonna, Antoine** Electrical Engineering James Gallery 9:00 - 9:15  
*Discrete Lighting Control using Integrated Circuit Architectures*

This research/design project deals with digitally-controlled, high-current drivers for light emitting diode (LED) arrays. Traditional lighting systems which employ the use of tungsten and halogen filaments to produce light are inefficient, costly to maintain, and provide the user with very little control over color temperature. New advancements in LED technologies have made them a viable solution for use in commercial and residential lighting systems. Forward phase control of the LEDs' power source will allow the light output to be varied. In addition, a digital controller will allow for individual LED arrays, of different color temperatures, to be dimmed both independently or in unison. The digital controller will also provide compensation for the logarithmic output characteristics of the LED arrays, ensuring that the perceived light output during dimming is linear. Readily available high output LEDs ranging from 1 to 5 watts are, on average, able to achieve a light output efficiency of 50 lumens/watt with an average life expectancy of 100,000 hours. In comparison, incandescent and halogen lamps achieve light efficiencies of 10 and 25 lumens/watt with an average life of 3000 and 5000 hours respectively. Great innovations in LED technologies have affirmed the use of LED lighting to satisfy the illumination needs of the future.

**Orsillo, Elizabeth** Food & Nutrition Ohio Rm. 3:30 - 5:00  
*Current Food Trends and Eating Habits in the Mahoning Valley*

Current Food Trends and Eating Habits in the Mahoning Valley Fast, convenient, healthy; more meals at home using convenience items; and new exotic flavors are some of the food trends predicted for Americans over the next decade by food marketing experts (AGMRC, 2008). Consumer preferences drive the food industry and the marketing of trend-current products can equally shape consumer purchasing behaviors (USDA, 2008). Mahoning Valley residents (n = 100) were surveyed to ascertain their awareness of and participation in current and past food trends, and sources of information that influence food behaviors. As a significant source of food and nutrition information, more female participants (71%) than males (50%) selected print media, while more males (57%) than females (48%) selected the internet. More females (43.2%) than males (35.7%) reported currently being on some form of modified diet. Low carbohydrate (34%), low fat (27%) and low calorie (11%) were the forms of diets most often reported by women, while high protein (29%), low carbohydrate (28%), low fat (21%) were those reported most often by males. Our results suggest that males and females have different influences on food behaviors and when education is aimed at them, may be better reached by different sources of information.

**Papa, Brandon** Mechanical Engineering James Gallery 4:15 - 4:30  
*SAE Supermileage Competition: Fuel Milage Maximization Through an Internal Combustion Engine*

This presentation covers the engine and drive train components of the Supermileage vehicle. The need to maximize fuel efficiency is becoming ever more pertinent in our day-to-day life. The increasing population in our country will lead to an increase of more drivers and more vehicles, which in turn, will lead to greater fuel consumption. Since gasoline is a non-renewable resource, there is a need to maximize fuel efficiency in today's vehicles. The object of the Society of Automotive Engineers (SAE) Supermileage Competition is to apply new technology in the field of aerodynamics, thermodynamics, and heat transfer. This is an international competition, which includes collegiate and high school teams and takes place every year at the Eaton Testing Facility in Marshall, Michigan. Each team was to design a vehicle, within certain constraints set forth by the Society of Automotive Engineers, in which new technology from around the globe was applied in order to achieve the best fuel economy while still providing sufficient acceleration, braking abilities, and other typical driving factors such as visibility and maneuverability. Each vehicle consisted of a single cylinder internal combustion engine with the use of electronic fuel injection, or conventional carburetion. For this particular vehicle, one of the three wheels was used to propel the vehicle from the rear while the remaining two wheels in the front of the vehicle were used to steer.

**Parker, Shannon** Mechanical Engineering James Gallery 11:45 - 12:00  
*Testing Apparatus for Nylon Bearing Chair Swivels*

Many of the chairs in our everyday environment are designed to swivel. The swivels that are most commonly used for these chairs utilize metal ball bearings. Ball bearing swivels wear out over time, often causing them to fall from the track. An inventor created a swivel that uses nylon instead of ball bearings. This design has proven to be much more reliable and safer, as the bearing stays in place even after the swivel itself has loosened from continuous use. Currently a machine tests the swivels, but there is no way to accurately quantify the test parameters or the results of the test. Consequently, it is impossible to complete an accurate comparison between the single nylon bearing and the ball bearing swivels. Therefore, an improved machine was built to perform quality testing on the swivels. The machine will test the swivel in a realistic manner. A force was applied to the swivel in a manner equivalent to actual use. The swivel was rotated via a belt drive for at least 500,000 revolutions. This machine was able to test multiple types of chair swivels, including rocker box and bar stool swivels. The entire machine, as well as the swivels, was put through a computerized stress analysis as well as a manual check of the computer results. The swivel was first designed in a 3-D modeling software package, and then imported into a stress analysis package.

**Parsons, Bryan** Mechanical Engineering James Gallery 3:45 - 4:00  
*PB & J Vehicle Barrier*

In today's society, traffic is in abundance over all parts of the world. Considering this, some facilities require the restriction of vehicle access. As a solution, a retractable bollard design was proposed. The PB & J barrier was named after the inventors of the barrier. The design entails that the barrier block one lane of traffic from a 6800 kg (15,000 lb) vehicle traveling at 48 kph (30 mph). The design was modified to fit various environmental constraints. It was engineered to withstand temperature fluctuations of -7 °C to 60 °C (-20 °F to 140 °F) and have the ability to resist natural reoccurring threats, like water (ice, snow etc). One of these preventions implemented was a water-flow system that effectively minimized moisture contact. Another design constraint applied was efficient energy consumption and a life expectancy of twenty years. The power supplied was between the range of 110 and 220 volts using a capable electric motor. To reduce life diminishing hazards, the barrier was made retractable into the ground encased in a reasonably sealed cavity. An advantage to using the vehicle barrier was that the installation process was kept in mind during the design process. The unit can be conveniently positioned directly into the ground all at once. The steel "box" structure with barrier equipment already affixed was lowered into the ground. The fully retractable bollard design was ensured to conform to necessary standards.

- Patton, Jennie** Master of Science in Chemistry Ohio Rm. 1:30 - 3:00  
*Rhodium(II)-catalyzed Decomposition of Furanose-derived Diazoesters*  
 There are many important naturally occurring organic compounds that feature two furan rings fused together. These compounds are challenging to synthesize, especially so if they contain chiral centers. In this project, which is supported by a grant from the Petroleum Research Fund of The American Chemical Society, we are investigating the use of organometallic chemistry for the efficient formation of various fused furan systems. Specifically, we are building platforms based on readily available furanoses that have diazoester groups attached, and studying the outcome of Rhodium(II)-catalyzed decompositions. Recent results from this work, including X-Ray and NMR experiments, will be presented in detail.
- Pavlicko, Mandy** Mechanical Engineering James Gallery 11:30 - 11:45  
*Mandrel Stress Relief Furnace*  
 As with any machining process, the stress relieving stage is of significant importance. After machining a metal below design specifications, it is welded to remove residual stresses and re-machined within tolerance. Although there is a worldwide demand for machining of many industrial components, there is one machine shop with the ability to machine pipe mandrels. These mandrels range in size from 152.4-304.8 mm (6-12 in) in diameter and 9.14-15.24 m (30-50 ft) in length. Because of the extensive amount of material, the stress relief across an entire mandrel rod can be tedious. The present stress relief furnace was originally constructed with little thought put into the design. However, it accomplishes the task of heating the mandrel rods to the correct temperature. Because the furnace is the first of its kind, problems ensued with continuous use: uneven temperature distribution, heat loss through seams and openings, warping of the furnace shell, a hot exterior surface, failure of bearings, and difficulty in use. Investigation of the heat analysis was done using various heat transfer methods and finite element analysis was conducted to design certain components of the motor-jack system.
- Pavlidakey, Katherine** Chemistry Ohio Rm. 8:30 - 10:00  
*Testing Glycomimetic Compounds to Determine Their Ability to Prevent Capsule Pro*  
 The potentially fatal nature of *Staphylococcus aureus* is exponentially enhanced by its incredible ability to evade medical treatment. At the current time *S. aureus* has developed resistance mechanisms to every class of antibiotics that are supposed to inhibit or kill the bacterium. Physiologically *S. aureus* is able to evade host immunological defense mechanisms due the presence of a structure known as the capsular polysaccharide. Inhibiting production of the capsular polysaccharide provides a novel approach to combating against antibiotic resistant *S. aureus*. By manipulating the synthesis of the sugars that make up the capsule, we can potentially construct compounds that may inhibit capsule formation. These sugars are specifically targeted via glycomimetics. The mimetic compounds are tested to determine their ability to block the production of the capsular polysaccharide in *S. aureus*. We will determine the ability of the mimetic to block capsular polysaccharide production by analyzing the binding affinity of monoclonal antibodies to the capsule.
- Penrose, Alexis** Industrial & Systems Engineering Ohio Rm. 10:30 - 12:00  
*Production Analysis of Trimming and Inspecting Operation at Fireline, Inc.*  
 At the local manufacturer of Fireline in Youngstown, Ohio, Youngstown State University Industrial Engineering students in the methods engineering class performed a field study. The specific process studied was the trimming of the edges of the ceramic vessels. This study forced extra learning about production analysis in the classroom while obtaining valuable experience in the field. Time study analysis was the major technique applied to this environment. Other techniques used include flow diagramming, line balancing, and the analysis of predetermined time systems consisting of MOST, MTM1, and MTM2. In this study, there was also a chance to use data collection, and work sampling techniques, which were learned in other courses.
- Petruzzi, John** Art Jones Rm. 2:00 - 2:15  
*Afflictions - Paintings by John G Petruzzi*  
 I have spent most of my life in Boardman, Ohio, where I developed a worldview only the relative safety of post-postmodern American suburbia could provide. To experience childhood during the nascent years of the information age was unique. I learned about much of the world remotely, through the glow of televisions and computers. Bright colors, plastic treasures, and bizarre characters pervaded my psyche, informing my earliest design sensibilities. While I continue to find the influence of technology inescapable, my love of nature also drives my art. As is often in reality, these two domains clash in my paintings. Vast landscapes meet abrupt ends in toxic collisions hovering on the edge of abstraction. These colorful catastrophes allude to biological extinctions of the past and present, while playfully pondering an uncertain and ominous future. My work explores a rapidly changing world; our species desire to understand it, the potential futility of that desire, and what scars on the earth may be left in our wake.
- Pfeil, Erin** Biology Coffelt Rm. 3:45 - 4:00  
*Modelling Forest Dynamics Using Field Data from Zoar Valley, Western New York*  
 Zoar Valley, in western New York State, is a rare example of a largely unaltered riparian zone. This rare find for the eastern United States contains anthropogenically undisturbed riparian ecosystems. We have catalogued here a 400-year riparian vegetational chronosequence, from newly colonized depositional bars to raised terraces supporting broadleaf-dominated old growth. Canopy and understorey composition quantified within 70 survey quadrats of varying stand age suggest succession may follow multiple pathways that appear to diverge early in this chronosequence. Because species compositional changes in forest systems occur too slowly to observe directly, we are employing computer modeling (e.g. SimForest, Netlogo) to simulate alternate successional pathways and outcomes while manipulating important starting parameters such as initial species composition and/or landform age and type. Additionally, we are manipulating the age maxima of selected species in an attempt to simulate the effects of introduced forest pathogens such as beech bark disease and hemlock woolly adelgid.



- Raib, Erienne** Telecommunication Studies Jones Rm. 2:30 - 2:45  
*Fred Astaire and Eleanor Powell in Broadway Melody of 1940: Tap's Finest Hour*  
 As talking motion pictures were reaching their peak during the 1930's, the American musical spectaculars were among the most popular. MGM's Broadway Melody of 1940 was the only on-screen pairing of Fred Astaire, the King of Tap, and Eleanor Powell, the First Lady of Tap. The final dance number of the film, performed to Cole Porter's "Begin the Beguine," was studied in depth to create an accurate reproduction of Astaire and Powell's choreography for the historical significance of this dance as it relates to the development of the film and dance industry. Their elaborate history as well as the dancers' interesting relationship was investigated to understand their ability to choreograph a tap routine that is still hailed as one of the best works to date. Through frame-by-frame viewing of the film, as well as the application of tap skills and technique, the choreography was accurately reproduced and recorded. The dance will be shown in its original context side by side with a live reproduction of the choreography.
- Renne, Ian** Biology Ohio Rm. 8:30 - 10:00  
*Eavesdropping in Plants: A Test of the Biochemical Recognition Hypothesis*  
 Allelopathy is the release of biologically active chemicals by one plant that inhibits the germination or growth of other plants. Traditionally, allelopathy has been viewed as a form of competition, where toxic plant chemicals disrupt the metabolism of recipient plants, thereby reducing their growth or germination. However, there is mounting evidence that phytochemical-induced germination inhibition could be adaptive and may not be a consequence of toxins. That is, there are benefits for a seed to chemically recognize a potential competitor and defer germination until better conditions exist. This Biochemical Recognition Hypothesis (BRH), formalized by Renne et al. (2004), challenges the allelopathy paradigm but remains untested. A key requisite for the biochemical recognition of neighboring plants by seeds is frequent ecological interactions among co-occurring species. We collected seeds of native species from Argentinean and North American grasslands and assessed whether phytochemicals from co-occurring plants exhibited greater germination reduction than phytochemicals from species that have had no historic association. Preliminary evidence partly supports the BRH. This project explicitly investigates evolutionary relationships among plant species, provides additional information on the consequences of non-native, invasive plants to those that are native, and may identify an important mechanism structuring plant communities.
- Ridzon, Matthew** Mechanical Engineering James Gallery 2:30 - 2:45  
*Hydraulically Operated Gate Security System*  
 Unwanted entrants and terrorists are always a concern at places of high security. Terrorists may try to force entry into a secured complex with the use of large vehicles with the notion that the large size of the vehicle will ensure successful entry into the desired location. This requires higher security at the vehicle entrance portals of many government buildings, military bases, and other secure buildings. Often, bollard type barriers are used at the entranceways for this purpose. A design was generated for a "pop-up" type bollard named "Pneumatically Operated System of Traffic Control Barrier" (P.O.S.T. Control Barrier). This design was created to span one lane of traffic 3 m (10 ft). A series of five posts (two stationary and three operable) provided the necessary protection. The three operable bollards protruded and retracted into the ground via hydraulic cylinders below the surface. The unit was designed to exceed American crash rating, K4-L3, which means a 6800 kg (15000 lbm) vehicle traveling at 48 kph (30 mph) penetrated the barrier no more than 0.9 m (3 ft). Government testing will certify the barrier with this rating. Energy and stress calculations confirmed that this barrier would be able to withstand the impact and uphold the required rating, thus ensuring adequate security at any desired location.
- Roberts, Trista** Chemical Engineering Ohio Rm. 10:30 - 12:00  
*Separation of Oil and Water Emulsion of Effluent Lubrication Streams from a Copper Mill*  
 In the Copper Mill Industry of rolling and forming copper, lubricants are needed to assist the machinery in order to form copper. Thus, a very chemically stable emulsified lubricant is needed. After the copper has been formed, the lubricant is desired to be purified. This necessitates breaking of the emulsion to recover water and oil separately. This presentation of a full-scale and bench-scale chemical engineering solution solves the problem of separating the emulsified lubricant to obtain the most amount of water possible from the separation process.
- Robinette, Paul** Environmental Studies Jones Rm. 11:00 - 11:15  
*Geocaching: A New Approach to Learning Geosciences Subjects*  
 Geocaching is popular activity wherein individuals equipped with GPS (Global Positioning System) receivers set out to find hidden caches based on geographic coordinates provided through the website: [www.geocaching.com](http://www.geocaching.com). During the "Field Experiences in Geology" course held between March 5-12, 2008 on the remote Bahamas island of San Salvador, geocaching was applied to teaching and learning specific geoscience subjects. The remote and essentially undeveloped island of San Salvador provides nearly unlimited opportunities for teaching basic and advanced geoscience subjects including but not limited to coastal processes, environmental science, biodiversity, and human use of limited natural resources. The geocache sites were designed to provide the students with a self-directed learning experience. Each geocache site was based on a specific geoscience subject with pre-determined learning outcomes. In addition, an instructor-led exercise was developed to introduce the students to GPS navigation and compass orienteering. The results focus on the learning outcomes achieved in GPS and orienteering proficiency and one geocache site that dealt with impacts of hurricanes on the natural environment. The learning outcomes were evaluated using multiple choice site pre-exercise and post-exercise evaluation tools. Preliminary results indicate modest success in achievement of learning outcomes for the exercises evaluated.
- Rodland, Nicholas** Electrical Engineering Ohio Rm. 10:30 - 12:00  
*Converting Human Kinetic Energy to Electricity Using a Stationary Bike*  
 Our goal is to modify a stationary exercise bike in such a way that it can be used as a generator while someone is exercising. The AC electricity generated while pedaling the bike will be converted into DC using a rectifier and a voltage regulator so that it can be stored in a deep cycle 12V battery. Once the battery has enough electricity stored, it can be passed through a power inverter and used as if it was coming straight from the electric company.

- Rosensteel, Dale** Electrical Engineering James Gallery 9:15 - 9:30  
*Hydrogen Dissociation from Salt Water*  
 An alternative fuel source is designed to create energy by using the basic principle of radio waves simulating the resonance frequency of a catalyst. This catalyst will be simulated in salt water, which the radio frequency will be directed through the medium. Exposure to radio waves creates a separation in the molecules causing the magnet bonding of oxygen-to-oxygen and hydrogen-to-hydrogen. The newly bonded molecules are released and are capable of being ignited. This ignition of the hydrogen creates a lot of energy in form of heat. The process of harnessing this energy will be the ultimate goal of this project. The efficiency of this design will be determined.
- Ross, Michelle** Biology Ohio Rm. 8:30 - 10:00  
*Alternative Methods to Treat Staphylococcus aureus Using a Synthesized Product*  
 Staphylococcus aureus is a common cause of community acquired and hospital acquired infections. S. aureus is a bacterium that causes a range of illnesses. This bacterium lives on the mucous membranes and skin, and in the colon and in urine. It causes life threatening diseases such as pneumonia, meningitis, endocarditis, toxic shock syndrome, and septicemia. An individual may be infected via the respiratory tract, pus from an infected wound, skin-to-skin contact with an infected person, and contact with objects used by an infected person. Type 5 and type 8 of this bacterium are the most common cause of hospital acquired infections. Strains of S. aureus are usually resistant to a variety of different antibiotics and there is concern that new antibiotics have not been forthcoming. The purpose of this experiment is to determine alternative methods to treat this infection by affecting the bacterium's polysaccharide capsule production. An important step in this process is creating a chemical analogue which is incubated with the bacterium at different concentrations. After a series of washes the bacterium is prepared and an indirect Enzyme-Linked Immunosorbent Assay (ELISA) can be run. Completion of this indirect ELISA includes using a colorimetric technique to see if the capsule specific monoclonal antibody is bound to the bacterium.
- Roth, Noelle** Food & Nutrition Ohio Rm. 3:30 - 5:00  
*Knowledge and Practices Related to Dietary Sodium*  
 The American Heart Association (AHA, 2008), reports that about 8 million Americans die each year from hypertension, and every third American has high blood pressure. They suggest that limiting sodium intake to 2,400 mg/day by avoiding salty foods and table salt can help control blood pressure. This study used a 15 item questionnaire to collect demographic data as well as evaluate YSU students' knowledge about sodium and health, eating habits that define sodium intake, and family history of chronic diseases impacted by sodium intake. Statistical analyses were performed using SPSS and ANOVA and t-tests were used to compare participants by ethnicity, family disease history, gender. Participants, n=172; 61% female; 83% Caucasian, 12% black; 61% with a family history of hypertension, were recruited from Kilcawley Center. The mean ( $\pm$  SEM) knowledge score (sodium content of foods) of Caucasians ( $9.85 \pm 0.21$ ) was significantly higher ( $p = 0.012$ ) than blacks' ( $7.8 \pm 0.58$ ). Female Sodium Risk Behavior scores ( $9.95 \pm 0.26$ ) indicated that they made significantly ( $p = 0.02$ ) healthier food choices than their male counterparts ( $10.57 \pm 0.42$ ). Although not statistically significant, there was a negative correlation between Sodium Knowledge and Behavior Risk scores ( $r = -0.15$ ). The results of this study indicate that there is room for improvement in sodium knowledge and food habits which other studies have indicated can reduce the onset and consequences of hypertension.
- Royal, Maurice** Biology Ohio Rm. 8:30 - 10:00  
*Future Treatments for Staphylococcus aureus*  
 The bacteria Staphylococcus aureus is linked to many clinical problems and also plays a part in the rising cost of health care. The bacteria's cell wall contains a capsule that withstands the body's immune system, by providing S.aureus with the ability to prevent phagocytosis. S.aureus is highly resistant to many antibiotics which brings forth the need for a different approach towards treatment. The use of mimetics is one such new approach. Mimetics is a drug that prevents the synthesis of the capsule. To determine the effectiveness of the mimetics it will be administered in different concentrations and incubated with S.aureus overnight. An EISA test in combination with a phagocytosis assay will be performed on the bacteria treated with mimetics. The ELISA test will indicate if capsule is produced by detecting the binding of a monoclonal antibody to the capsule. The phagocytosis assay will indicate the prevention of capsule formation by displaying a decrease in bacterial colony formation.
- Ryan, Caitlyn** English Jones Rm. 1:45 - 2:00  
*Nought but Grief an' Pain for Promis'd Joy: A Sympathetic Look into the Character and Motherhood of a Classic British Monstress*  
 For centuries, Grendel's mother, the second great antagonist in the Old English epic Beowulf, has been unfairly vilified. She does not desire to persecute Beowulf, Hrothgar, or the Danish people. She reacts to the loss of her son according to the accepted practices of Danish civility. This paper explores the role of Grendel's mother as a matriarch, her conformity to Danish cultural customs, and her eventual tragic end.
- Ryan, Caitlyn** Anthropology Ohio Rm. 10:30 - 12:00  
*Status, Workshops, and Ritual Goods: Excavations at the Ancient Maya City of Cancuen, Guatemala*  
 Excavations in 2007 at the ancient Maya city of Cancuen in Guatemala revealed a high status residence and workshop complex north of the site's spectacular palace. Cancuen is located at a strategic position in a bend of the great Pasión River where the jungles of the Petén begin to ascend into the volcanic mountains to the south. From this position the kings of Cancuen were able to control the flow of exotic highland goods to the kingdoms to the north while gaining wealth and prestige for themselves. Archaeological research at Cancuen has revealed the largest palace yet discovered at any Maya site, surrounded by a series of workshops that crafted raw highland materials into finished elite goods. Included among these are workshops for obsidian and pyrite and the largest jade workshop ever discovered in the New World. The focus of research in the summer of 2007 was a newly discovered high status complex on the north side of Cancuen. Excavations revealed three burials and grave goods associated with two of these suggest that the complex may have been an obsidian workshop. Ceramics from a midden (trash pit) date occupation to the 8th century AD and clearly indicate the elite status of the residents of this complex. Our poster presents our excavations and places our findings into the broader context of Cancuen and the Late Classic period (AD 600-900) of the Maya world.

- Sands, Kyle** Mechanical Engineering James Gallery 4:15 - 4:30  
*SAE Supermilage Competition: Fuel Milage Maximization Through an Internal Combustion Engine*  
 This presentation covers the engine and drive train components of the Supermileage vehicle. The need to maximize fuel efficiency is becoming ever more pertinent in our day-to-day life. The increasing population in our country will lead to an increase of more drivers and more vehicles, which in turn, will lead to greater fuel consumption. Since gasoline is a non-renewable resource, there is a need to maximize fuel efficiency in today's vehicles. The object of the Society of Automotive Engineers (SAE) Supermileage Competition is to apply new technology in the field of aerodynamics, thermodynamics, and heat transfer. This is an international competition, which includes collegiate and high school teams and takes place every year at the Eaton Testing Facility in Marshall, Michigan. Each team was to design a vehicle, within certain constraints set forth by the Society of Automotive Engineers, in which new technology from around the globe was applied in order to achieve the best fuel economy while still providing sufficient acceleration, braking abilities, and other typical driving factors such as visibility and maneuverability. Each vehicle consisted of a single cylinder internal combustion engine with the use of electronic fuel injection, or conventional carburetion. For this particular vehicle, one of the three wheels was used to propel the vehicle from the rear while the remaining two wheels in the front of the vehicle were used to steer.
- Scarmuzzi, Patricia** History Pugsley Rm. 11:00 - 11:15  
*Negotiating Polish History: Scripting a Holocaust Exhibit for the Slovak Nationa*  
 A panel of graudate student in Applied History will discuss some of the issues encountered in presenting scholarship for genreal audiences. The specific project involved distilling a recently discovered diary related to the Holocaust in Slovakia into exhibit panels for display at the Slovak National Embassy and other venues. Students wil relate their experiences in dealing with potentially sensitive content, questions such as current attitudes toward the Holocaust among potential exhibit sponsors and viewers as well as practical questions arising from collaboration among scholars, designers, educators and students when dealing with a topic on the frontier of research in this particular field.
- Schneider, Daniel** Electrical Engineering James Gallery 9:15 - 9:30  
*Hydrogen Dissociation from Salt Water*  
 An alternative fuel source is designed to create energy by using the basic principle of radio waves simulating the resonance frequency of a catalyst. This catalyst will be simulated in salt water, which the radio frequency will be directed through the medium. Exposure to radio waves creates a separation in the molecules causing the magnet bonding of oxygen-to-oxygen and hydrogen-to-hydrogen. The newly bonded molecules are released and are capable of being ignited. This ignition of the hydrogen creates a lot of energy in form of heat. The process of harnessing this energy will be the ultimate goal of this project. The efficiency of this design will be determined.
- Schneider, Kathleen** Mechanical Engineering James Gallery 11:30 - 11:45  
*Mandrel Stress Relief Furnace*  
 As with any machining process, the stress relieving stage is of significant importance. After machining a metal below design specifications, it is welded to remove residual stresses and re-machined within tolerance. Although there is a worldwide demand for machining of many industrial components, there is one machine shop with the ability to machine pipe mandrels. These mandrels range in size from 152.4-304.8 mm (6-12 in) in diameter and 9.14-15.24 m (30-50 ft) in length. Because of the extensive amount of material, the stress relief across an entire mandrel rod can be tedious. The present stress relief furnace was originally constructed with little thought put into the design. However, it accomplishes the task of heating the mandrel rods to the correct temperature. Because the furnace is the first of its kind, problems ensued with continuous use: uneven temperature distribution, heat loss through seams and openings, warping of the furnace shell, a hot exterior surface, failure of bearings, and difficulty in use. Investigation of the heat analysis was done using various heat transfer methods and finite element analysis was conducted to design certain components of the motor-jack system.
- Schuler, Erin** Chemistry Ohio Rm. 1:30 - 3:00  
*Structure and Preliminary Biological Evaluation of N-Glycosyl-1,2,3-triazoles*  
 We are building various N-glycosyl analogs of simple carbohydrates that might be capable of interacting, and thus modulating, the action of important enzymes such as glycosidases which are responsible for the manipulation of sugars in vivo. The chemical synthesis of N-glycosyl-1,2,3-triazoles is straightforward, from readily available glycosyl azides, and the detailed structure of these compounds follows from solution NMR as well as solid state X-Ray diffraction studies. Initial enzymatic assays using commercially available glycosidases suggest that these compounds do not act as inhibitors; these results are rationalized based on the detailed compound structure in relation to the known mechanism of action of the glycosidase enzymes.
- Sedlacko, David** Biology Ohio Rm. 8:30 - 10:00  
*Eavesdropping in Plants: A Test of the Biochemical Recognition Hypothesis*  
 Allelopathy is the release of biologically active chemicals by one plant that inhibits the germination or growth of other plants. Traditionally, allelopathy has been viewed as a form of competition, where toxic plant chemicals disrupt the metabolism of recipient plants, thereby reducing their growth or germination. However, there is mounting evidence that phytochemical-induced germination inhibition could be adaptive and may not be a consequence of toxins. That is, there are benefits for a seed to chemically recognize a potential competitor and defer germination until better conditions exist. This Biochemical Recognition Hypothesis (BRH), formalized by Renne et al. (2004), challenges the allelopathy paradigm but remains untested. A key requisite for the biochemical recognition of neighboring plants by seeds is frequent ecological interactions among co-occurring species. We collected seeds of native species from Argentinean and North American grasslands and assessed whether phytochemicals from co-occurring plants exhibited greater germination reduction than phytochemicals from species that have had no historic association. Preliminary evidence partly supports the BRH. This project explicitly investigates evolutionary relationships among plant species, provides additional information on the consequences of non-native, invasive plants to those that are native, and may identify an important mechanism structuring plant communities.

- Sfara, Nathan** Mechanical Engineering James Gallery 4:00 - 4:15  
*Road Protection Guard: A Design of Anti-Ram Barriers*  
 The possibility of unwanted vehicles entering restricted areas throughout the country is a very real threat. This can include attacks on airports, government buildings, power plants and medical laboratories. The use of trucks to break through barriers and gain access to the restricted areas was the main point of this project. This study must meet many criteria including impacts, design, and easy maintenance. This work tested the durability, stopping distance, and damage caused to a truck weighing 6800 kg (15000 lbm) going 48 kph (30mph). The design incorporates three steel barriers filled with concrete, spaced 0.76 m (2.5 ft) apart and 1 m (3 ft) tall. Impact mechanics were also used to predict where the failure would occur in the structure before it happens. In the end, all of the analyses used will determine the structural design and safety of the Road Protection Guard (R.P.G.). Safety was the most important factor in the design, for any civilian bystanders in the area. Limiting factors such as maintenance, cost, and weather were also taken into account when the final design was produced.
- Sherrod, Scott** Mechanical Engineering James Gallery 10:45 - 11:00  
*Cyclone Support Structure*  
 In the application of an aluminum recycling system, a cyclone is used to separate air from aluminum. The aluminum is then collected in an area beneath the cyclone. In normal use, this process requires several pieces of equipment to be placed beneath the cyclone. As such, the cyclone must be raised to a certain height for all equipment to be used properly. This application will be located in a region with more extreme wind and weather loads than most previous applications. The height of the top of the cyclone needs to be over 24 m (80 ft) above ground with a supported diameter of 5.5 m (18 ft). The cyclone, when full of material, can reach in excess of 23,000 kg (50,000 lbm.). A structure is necessary to support this weight in worst case scenarios, including weather loading from snow and wind in the region. This structure was required to be designed for easy manufacture, safety, and cost concerns. As such, standard English W-type beams were used along with standard plate, angle, channel, and bolt sizes. An original design was used for overall dimensions for the structural beams and was analyzed using stress analysis and finite element analysis to determine the correct size of all structural members. The computer program Autodesk Inventor was then used to completely model all important aspects of the structure for review and eventual detailed drawings for construction and assembly.
- Shook, Kendra** Chemical Engineering Bresnahan I Rm. 2:00 - 2:15  
*Separation of Water from Chemically Emulsified Oil*  
 Chemically emulsified oil and water, while making some parts of industrial processes easier, can become a hazardous waste problem. By finding a reasonable separation process, a company will save money both from waste disposal and from being capable of reusing resources. Various salts and salt combinations were used to demulsify the oil and water by changing ionic strengths. It was found that a combination of aluminum chloride (a small amount) and sodium chloride (near saturation) will separate the emulsion. A bench scale process was formed for complete separation and to purify water down to 20ppm oil. A scale-up model is proposed which would help industry with the waste disposal problem.
- Shook Jr., Gregory** Biology Ohio Rm. 8:30 - 10:00  
*Eavesdropping in Plants: A Test of the Biochemical Recognition Hypothesis*  
 Allelopathy is the release of biologically active chemicals by one plant that inhibits the germination or growth of other plants. Traditionally, allelopathy has been viewed as a form of competition, where toxic plant chemicals disrupt the metabolism of recipient plants, thereby reducing their growth or germination. However, there is mounting evidence that phytochemical-induced germination inhibition could be adaptive and may not be a consequence of toxins. That is, there are benefits for a seed to chemically recognize a potential competitor and defer germination until better conditions exist. This Biochemical Recognition Hypothesis (BRH), formalized by Renne et al. (2004), challenges the allelopathy paradigm but remains untested. A key requisite for the biochemical recognition of neighboring plants by seeds is frequent ecological interactions among co-occurring species. We collected seeds of native species from Argentinean and North American grasslands and assessed whether phytochemicals from co-occurring plants exhibited greater germination reduction than phytochemicals from species that have had no historic association. Preliminary evidence partly supports the BRH. This project explicitly investigates evolutionary relationships among plant species, provides additional information on the consequences of non-native, invasive plants to those that are native, and may identify an important mechanism structuring plant communities.
- Sinn, Brandon** Biology Ohio Rm. 8:30 - 10:00  
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 Allelopathy is the release of biologically active chemicals by one plant that inhibits the germination or growth of other plants. Traditionally, allelopathy has been viewed as a form of competition, where toxic plant chemicals disrupt the metabolism of recipient plants, thereby reducing their growth or germination. However, there is mounting evidence that phytochemical-induced germination inhibition could be adaptive and may not be a consequence of toxins. That is, there are benefits for a seed to chemically recognize a potential competitor and defer germination until better conditions exist. This Biochemical Recognition Hypothesis (BRH), formalized by Renne et al. (2004), challenges the allelopathy paradigm but remains untested. A key requisite for the biochemical recognition of neighboring plants by seeds is frequent ecological interactions among co-occurring species. We collected seeds of native species from Argentinean and North American grasslands and assessed whether phytochemicals from co-occurring plants exhibited greater germination reduction than phytochemicals from species that have had no historic association. Preliminary evidence partly supports the BRH. This project explicitly investigates evolutionary relationships among plant species, provides additional information on the consequences of non-native, invasive plants to those that are native, and may identify an important mechanism structuring plant communities.



- Smith, Wendy** Nursing Ohio Rm. 3:30 - 5:00  
*Transcultural Nursing Experience in Maiz, Mexico*  
 This poster depicts the experiences of a healthcare team caring for individuals in Maiz, a poor town in east central Mexico. The team consisted of four (4)nursing students and four (4)faculty from a university in the Midwest, three (3)physicians, a pharmacist, a minister, and other support staff. A primary care clinic was held in a one room church for children, pregnant women and adults, many who had multiple, chronic health problems. It was the first time students worked with non-English speaking clients with these basic and diverse health care needs. During this two day clinic, the nursing students triaged over 280 indigent patients and were able to perfect their assessment skills as they followed individual patients from intake, triage, physician's visit, pharmacy, and discharge teaching. This experience provided an opportunity for students to develop their leadership skills by becoming patient advocates and active learners in a diverse setting. They also discovered creative forms of communications and nursing interventions. Cultural competence as defined by Smith(1998), is a continuous process of cultural awareness, knowledge, skill, interaction, and sensitivity among caregivers and the services they provide. Through this experience, the nursing students began to acquire cultural competence as they provided care. All team members felt a sense of personal satisfaction while increasing their knowledge of the Mexican culture and health care.
- Stadler, William** Master of Science in Engineering James Gallery 11:00 - 11:15  
*Fireline, Inc. Quality Improvement Project - Reduction of Ceramic Cracks*  
 Fireline, Inc. is a specialty refractory ceramics manufacturer, located in Youngstown, Ohio, which supplies many specialty metal alloy foundries with shapes used to hold or guide molten metals, or to insulate equipment from the extreme heat effects caused by proximity with superheated molten metals. Many foundries which are involved with the melting, pouring, and casting of specialty alloys (such as nickel, magnesium, and aluminum alloys) employ the use of a ceramic ingot melting vessel (called a liner) to "pre-melt" a solid metal ingot prior to pouring it into a mold shape to form whatever shaped part is needed at process end. The typical customers of Fireline, Inc. are casting parts used in such applications as jet engines, industrial gas turbine assemblies, and in other areas where high temperature performance is needed. The specialty alloy foundries have relied on refractory ceramics for their processes for two primary reasons: · Thermal shock resistance · Chemical inertness to contact with the molten specialty alloys. The supplied part must also be free of any surface defects, such as cracks, which will readily propagate into larger cracks during usage. The undertaking of a Quality Improvement (QI) project by Fireline, Inc to reduce process cracks in liner parts is the focus of this paper.
- Steh, Stephen** Criminal Justice Jones Rm. 4:30 - 4:45  
*Public Views of Police Deception*  
 Instruments were distributed to several groups of students in a classroom setting at a major Midwestern university. The instrument used a vignette as the main focus, where the variable of interest was rotated through one of four types of crimes, Domestic Terrorism, Assault, Auto Theft and the non specific generic type of A Crime. The Respondents were asked whether they believed it was an acceptable practice for police to deceive a person of interest in these vignettes. Results indicated that there appeared a statistical significant across the four circumstances. There were also found to be statistically significant associations between lying to witnesses, victims and suspects. It was also found that students who had logged more time in school trusted the police more than those who had not. The results also indicated that the acceptability of police deception may be dependent on the perceived conceptual distance to the crime in question.
- Stein, Stacey** Criminal Justice Jones Rm. 3:30 - 3:45  
*An Evaluation of Ohio's Drug Courts: Emphasis on Youngstown*  
 The high value of drug courts with respect to the correlation of drugs and crime have continually become more important due to municipalities budgets. They continue to get more difficult to manage. Recent research has brought forth much needed information concerning recidivism rates and cost/ benefit analysis of drug courts; due to concerns and apprehensions by politicians and taxpayers in regards to operating drug courts. The purpose of the paper is to examine Ohio Drug Courts and evaluate existing research. Why Ohio needs this specialized court? How Ohio's Drug Courts relate with other Drug Courts in America. The paper will evaluate the key components, statistics connected to crime and recidivism rates with drug court participants. Methodology used is content analysis. I will review several research articles concerning the important issues related to drug courts. I examine Ohio laws concerning drug courts. Finally, I evaluate Youngstown Drug Courts and how they compare to others across the nation.
- Stipanovich, Susan** History Ohio Rm. 10:30 - 12:00  
*Hezbollah: A Case Study*  
 Hezbollah: A Case Study is a research project concerned with the Lebanese-based group Hezbollah. The study focuses on the history of the group, as well as the party's organization and current activities. Social, political, and economic implications for those living within the group's controlled area will be explored.
- Thompson, William** Mechanical Engineering James Gallery 11:45 - 12:00  
*Testing Apparatus for Nylon Bearing Chair Swivels*  
 Many of the chairs in our everyday environment are designed to swivel. The swivels that are most commonly used for these chairs utilize metal ball bearings. Ball bearing swivels wear out over time, often causing them to fall from the track. An inventor created a swivel that uses nylon instead of ball bearings. This design has proven to be much more reliable and safer, as the bearing stays in place even after the swivel itself has loosened from continuous use. Currently a machine tests the swivels, but there is no way to accurately quantify the test parameters or the results of the test. Consequently, it is impossible to complete an accurate comparison between the single nylon bearing and the ball bearing swivels. Therefore, an improved machine was built to perform quality testing on the swivels. The machine will test the swivel in a realistic manner. A force was applied to the swivel in a manner equivalent to actual use. The swivel was rotated via a belt drive for at least 500,000 revolutions. This machine was able to test multiple types of chair swivels, including rocker box and bar stool swivels. The entire machine, as well as the swivels, was put through a computerized stress analysis as well as a manual check of the computer results. The swivel was first designed in a 3-D modeling software package, and then imported into a stress analysis package.

- Thompson, Ric** Industrial & Systems Engineering Ohio Rm. 10:30 - 12:00  
*Work Measurement and Productivity Development at Altronic Inc.*  
 Altronic is a local company that produces ignition systems and controls for engines that pump, process, transport oil and gas around the globe. The company continues to grow and set records with new products. The objective of our work is to perform a time study using a series of analysis including field observation, video recording, stopwatch data collection, pre-determined time systems, and work sampling techniques. The outcome of our work is to identify a standard time for certain workers to work at a certain pace and effort to perform effectively. This standard should agree with the standard presently being used. Review of time standards is important in maintaining the company's quality and reliability of their products to allow them to continue to be a strong competitor in the global market.
- Trees, Geoffrey** Civil Engineering Coffelt Rm. 11:15 - 11:30  
*Multi-detector Coincidence Techniques to Test Induced Depletion of 178m2Hf*  
 Recent experiments have suggested a possible transition at 331 keV in 178Hf that may allow induced depletion of its 31 year isomer. The probability of detecting events in experimental conditions is expected to be relatively low and will require techniques to distinguish between background radiation and induced events. The use of a PXI DSP system and two 4-fold HPGe Clover detectors will allow coincidence techniques to be applied. This talk will discuss the development and design of an experiment to test depletion of this isomer using 331 keV photons from bremsstrahlung at Youngstown State University's X-ray Effects Laboratory as part of the Isomer Physics Project.
- Unger, Jennifer** Literature for Children and Young Adults Bresnahan II Rm. 1:45 - 2:00  
*Readers Theater*  
 Teachers often ask themselves what can I do to make learning more interesting for my students? The answer is Readers Theater. Readers Theater, or staged reading, is a simple and effective way for students to engage in an oral interpretation of literature. Readers Theater is a wonderful way for teachers to promote comprehension and fluency skills in the classroom. Also, Readers Theater can be used as an authentic assessment tool. Some teachers may be hesitant to use Readers Theater because they think it is a big elaborate play. Readers Theater does not require sets, props, costumes, or students to memorize scripts. It can be prepared in a short amount of time, for example at the end of the day. The most important thing about Readers Theater is that it is a way to make students of every learning level successful!
- Vabbilisetty, Pratima** Chemistry Ohio Rm. 1:30 - 3:00  
*Studies of Substrate Materials For Trace Analysis by SERS Techniques*  
 Raman scattering spectroscopy is an analytical tool which provides information about the chemical structures and composition of molecules based on the principle of Raman scattering. While normal Raman Scattering is usually weak and not useful for trace analysis, it can be greatly enhanced at certain metal surfaces which allows trace level measurements to be performed. This approach is known as surface enhanced Raman scattering (SERS) and is a form of vibrational spectroscopy that is usually performed at gold or silver metal surfaces. In this project, SERS approaches are being investigated for their use for trace analysis of SERS active compounds. Different types of substrates have been prepared and SERS spectra for Rhodamine (R6G) and benzoic acid species have been evaluated as model compounds to enable comparisons of the substrates. Different aggregating agents such as sodium chloride (NaCl) and sodium nitrate (NaNO<sub>3</sub>) have been used to provide effective SERS using gold and silver colloids. Two different Raman systems have been utilized including a near infra red system using a 785nm laser and a visible wavelength system using a laser at 532nm. The relative performance of these systems using different combinations of substrates and molecules is under investigation.
- Vadjinia, Tracy** Biology Ohio Rm. 1:30 - 3:00  
*In Situ Alkyl and Acyl Azide Synthesis Using p-ABSA/DBU*  
 The commercially available sulfonyl azide p-acetamidobenzensulfonyl azide (p-ABSA) reacts with the organic base 1,8-diazabicycloundec-7-ene (DBU) to produce an organic soluble salt that serves as a safe source of azide anion. We are developing safe routes to important organic azides, such as alkyl and acyl azides, by using this salt in reactions with simple substrates such as alkyl and acyl halides. The chemistry developed thus far, the use of microwave heating to speed up reactions, as well as the use of Infra-red spectroscopy to follow the course of reactions will be presented.
- Valerio, Vincent** Art Ohio Rm. 10:30 - 12:00  
*Quantitative Evaluation of Face Sketch*  
 Quantitative Evaluation of Face Sketch Abstract "Quantitative Evaluation of Face Sketch Using an Image Based Recognition Method" is an ongoing, cross-disciplined, research project between the Department of Computer Science and Information Systems and the Department of Art. The goal of the project is to study the effectiveness of face sketches for the purpose of suspect identification, by using a widely accepted rating system in pattern recognition and biometrics. Assistant Professor Dr. Yong Zhang and Assistant Professor Christine McCullough head this project. As one member of a team of sketch artists, it is my job to help create a database of images from a series of three experiments that imitate real life scenarios. The images will ultimately provide the data to be evaluated by Dr. Yong Zhang and graduate students of the Computer Science Department. These experiments increase in difficulty, starting with drawing from a photograph and ending with drawing from a verbal description in a simulated eyewitness account. Scientific merit aside, this project importantly points to individuality within visual interpretation. The work presented represents a portion of the images drawn for the first phase of the project. In a comparison of the drawings from all artists, no two drawings of the same subject look alike.

**Vernon, Daniel** Mechanical Engineering James Gallery 2:00 - 2:15  
*Design of The Hammer: an Anti-Ram Vehicle Barrier*

In current society, strong security has become a high priority. The ability to restrict unauthorized vehicles from secured premises is desired. This study provides a design of an anti-ram vehicle barrier that will prevent a 6800kg (7.5 ton) vehicle, moving at 48km/hr (30mph) from entering a property. The proposed design consisted of two concrete-filled posts with a lateral plate stretching across one standard lane of traffic. A winch system was used to raise and lower the mechanism within 30 seconds. The model analyzed stresses within the model after an impact load was applied. This design utilizes a combination of a retractable plate and retractable post model. The computer models showed the design was safe. The challenge of this design was to meet all requirements set forth, while making a robust design. Some of these requirements included; the applicable standards of AISC, ASME, or AISI, withstanding extreme temperatures, and operating for 100,000 cycles. While safety was of utmost concern, ease of performance and manufacture were also important along with a low manufacturing cost. The goal of this design was to meet an overall manufacturing cost of \$140,000 per unit. In conclusion, methods of stress analysis and dynamics were used to verify the final design.

**Vlaiku, Bethany** Chemistry Ohio Rm. 1:30 - 3:00  
*Conformational Analysis Using Chem3D: Cyclohexanes to Synthetic Carbohydrates*

In Organic Chemistry 3719 and 3720 we cover the basics of how organic molecules adopt lowest energy shapes, or conformations, based on steric effects and the general attempt within molecules to avoid destabilizing interactions. For the Honors component of these classes we have taken the ideas further and, in 3719, used the Chem3D program (from CambridgeSoft) in order to model various cyclohexane derivatives. This exercise allowed us to see that the idealized form of a ring, for example in a cyclohexane derivative, is perturbed by adding bulky groups in axial positions. Often the ring adopts a shape that is quite far from the ideal chair conformation. In Chemistry 3720 we have taken these ideas further and studied the minimized shapes of several synthetic carbohydrate analogs that have been made at YSU. This presentation will detail our work with Chem3D and will include conclusions about the preferred geometries of the carbohydrate mimics.

**Wajda, Douglas** Mechanical Engineering James Gallery 2:15 - 2:30  
*Design of the No-Go Vehicle Barrier*

A problem occurs when a strong barrier must be easily concealable and the ability to be accessed for repairs when needed. The design barrier must adhere to standards of AISC, ASME, or AISI and protect a 3m (10 ft) wide area equaling one traffic lane. The purpose of this project was to design a versatile barrier that follows the previously mentioned guidelines. Each barrier used a 110 or 220 volt power supply and was retractable. Other characteristics of the barrier are an ability to work in a temperature range that is between -29oC to 60oC (-20oF to 140oF) and a capability of performing 100,000 cycles at a minimum speed of 30 seconds per cycle. The barrier was designed to be concealed when not in use, easily maintained, and repaired. The approximate life of each unit when not used specifically to stop a vehicle is about 20 years with predicted supply of 500 units per year at \$140,000 per unit. The flat plate barrier was raised and lowered by a chain driven by a motor, with a speed of 1750 rpm beneath the plate. At its maximum angle, the plate will lock into place until the motor is used for its return to the lowered position. While the plate was used it stopped the vehicle almost immediately on impact. The overall desired outcome of the design of this barrier was the ability of the barrier to stop a 6,800 kg (15,000 lb) vehicle traveling at 50kph (30 mph) and allowing the vehicle to travel no more than 0.9 meters (3 ft) after hitting the barrier.

**Walsh, Tiffany** Respiratory Care Bresnahan II Rm. 10:45 - 11:00  
*Literacy Assessment of Internet Based Consumer Healthcare Information*

The internet contains a large amount of consumer health information. The U.S. Department of Health and Human Services (USDHHS) suggests consumer comprehension may be compromised if the content exceeds a seventh grade reading level. We hypothesize that the average reading level of internet-based consumer health information related to heart disease, cancer, stroke, chronic obstructive pulmonary disease and diabetes exceeds a seventh grade level. METHODS: The official websites of the medical associations representing each disease were accessed to randomly obtain health-related articles designed for non-healthcare professionals. Each article's readability level was assessed using three readability tools: SMOG, Gunning-FOG, and Flesh-Kincaid. Mean readability scores were reported for each disease. These scores were categorized by USDHHS standards: "easy to read" (<6th grade), "average difficulty" (7th-9th grade), and "difficult" (>9th grade). Articles were then assessed based on the following content domains: definition, treatment, risk factors/prevention, diagnosis/screening, and general facts. RESULTS: All articles exceeded the seventh grade level. The American Lung Association website scored at the lowest literacy level for each tool. General knowledge articles scored the lowest by domain. Even the lowest scores were above the recommended level. CONCLUSIONS: Consumer information should be written at the recommended reading level to ensure successful communication.

**Walsh, Donna** Master of Business Administration Pugsley Rm. 2:30 - 2:45  
*The Antecedents of Academic Dishonesty in MBA Programs*

This study draws upon literature from education, psychology, and business administration to discuss the possible antecedents of academic dishonesty in MBA programs, the reasons for academic dishonesty, and ways to promote academic integrity. Fifteen propositions are offered for future research on this important topic. Most of the propositions suggest that the antecedents of academic dishonesty are external to the individual. Some are peculiar to the MBA student, such as likelihood of extrinsic rather than intrinsic motivation, exposure to corporate misconduct at work or in the news, and exposure to amoral business and economic theories and philosophies. Others are situational, and relate to the amount of time a student is willing or able to devote to his or her studies. Some, however, arise from the policies and practices of academic institutions and instructors. This is perhaps the most intriguing aspect of this research.



**Wilson, Andrew**

Sociology

Bresnahan II Rm. 11:30 - 11:45

*Undergraduate Interest in Gerontology*

The elderly segment of our population has been growing rapidly in recent years, and is projected to grow to 20% by the year 2030. An array of professionals needs to be educated to meet this demographic change. Many students have shown a lack of interest in gerontology. This study was completed to identify barriers to interest in gerontology, and also construct a model for student interest in gerontology. Undergraduate interest in the study of gerontology was examined in relation to age, gender, stereotypes of the elderly, contact with older adults, and perceptions of work with the elderly. Undergraduate students at Youngstown State University (n=543) self assessed their interest in studying gerontology, stereotypes of elderly people, and perceptions of the practical applications of gerontology. Background information, including contact with elderly people, previous study in gerontology, and general demographics was collected. Being female ( $p<.01$ ), taking an aging class ( $p<.01$ ), and having positive perceptions of work with the elderly ( $p<.01$ ) were all found to contribute significantly to an interest in gerontology.

**Winters, Josh**

Mechanical Engineering

James Gallery 4:15 - 4:30

*SAE Supermileage Competition: Fuel Milage Maximization Through an Internal Combustion Engine*

This presentation covers the body and chassis components of the Supermileage vehicle. The need to maximize fuel efficiency is becoming ever more pertinent in our day-to-day life. The increasing population in our country will lead to an increase of more drivers and more vehicles, which in turn, will lead to greater fuel consumption. Since gasoline is a non-renewable resource, there is a need to maximize fuel efficiency in today's vehicles. The object of the Society of Automotive Engineers (SAE) Supermileage Competition is to apply new technology in the field of aerodynamics, thermodynamics, and heat transfer. This is an international competition, which includes collegiate and high school teams and takes place every year at the Eaton Testing Facility in Marshall, Michigan. Each team was to design a vehicle, within certain constraints set forth by the Society of Automotive Engineers, in which new technology from around the globe was applied in order to achieve the best fuel economy while still providing sufficient acceleration, braking abilities, and other typical driving factors such as visibility and maneuverability. Each vehicle consisted of a single cylinder internal combustion engine with the use of electronic fuel injection, or conventional carburetion. For this particular vehicle, one of the three wheels was used to propel the vehicle from the rear while the remaining two wheels in the front of the vehicle were used to steer.

**Wise, Sara**

Mechanical Engineering

James Gallery 4:45 - 5:00

*The Great Moonbuggy Competition: Reverse Pedaling and Frame Aspects*

This presentation covers the reverse pedaling and frame aspects of the redesign. Every year a group of engineering students designs a moonbuggy in order to prepare it for The Great Moonbuggy Competition in Huntsville, Alabama. The competition was created to provide students an opportunity to gain a hands-on engineering experience, in which the team will encounter problems similar to ones the original moonbuggy team from the Apollo Missions encountered. In order to replicate the original moonbuggy mission, the race consists of an environment that resembles a lunar terrain. Different obstacles such as craters, rocks, inclines, lava ridges, and lunar soil throughout the course will test the design and durability of the buggy. This year the moonbuggy was designed to improve on last year's design and place higher in competition. After careful analysis of the moon buggy, the needed improvements were: 1) to reverse the rear pedaling system, 2) to improve the design of the hub box, and 3) to add hydraulic brakes. Research was then completed in order to maximize the effects of these changes. In order to reverse the pedaling system, it was decided that new sprockets and chains were needed. The current ones were either bent or improperly positioned. Three deraileurs/tensioners were added to enable the reverse pedaling to occur at the rear of the vehicle.

**Witt, Travis**

Chemical Engineering

Ohio Rm. 10:30 - 12:00

*Seperation of Oil and Water Emulsion of Effluent Lubrication Streams from a Copper Mill*

In the Copper Mill Industry of rolling and forming copper, lubricants are needed to assist the machinery in order to form copper. Thus, a very chemically stable emulsified lubricant is needed. After the copper has been formed, the lubricant is desired to be purified. This necessitates breaking of the emulsion to recover water and oil separately. This presentation of a full-scale and bench-scale chemical engineering solution solves the problem of separating the emulsified lubricant to obtain the most amount of water possible from the separation process.

**Wolfgang, Adam**

Mechanical Engineering

James Gallery 1:30 - 1:45

*Anti-Penetration Equipment Designed For the Obstruction of Vehicles*

In this age of worldwide security being a top priority among clients, it is important to protect people both and the places in which they work. One of the most vulnerable points in many of the secure locations is the access driveway. It was requested that a road barrier be designed utilizing several criteria: 1) be able to withstand a collision force with a 6800 kg (15000 lb) vehicle at 50 kph (30 mph) and render said vehicle inoperable; 2) have the ability to be quickly removed to allow for authorized admittance; 3) be a self contained, non-removable, subterranean structure; and 4) provide a reliable barrier. The barrier designed consisted of cylindrical shafts. Each shaft was made out of common steel pipe and was filled with structural grade concrete. The shafts were made retractable by the use of a 1750 rpm Dodge motor. The structural challenges involved were the creation of a continually reliable structure which had the structural integrity to withstand the specified forces, and the ability to have the barrier retract at a relatively fast rate. Ultimately, the design was confirmed through manual, computer and engineering analyses. The stresses were found and rendered safe compared to the provided guidelines and design factors.

